THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
The Railway Engineer · TRANSPORT · The Railway News
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CONTENTS

	PAGE
Editorial Notes	77
Mr. Ellson's Record	79
Legislators and the Coal Industry	80
Letters to the Editor	82
The Scrap Heap	83
Overseas Railway Affairs	84
Wartime Organisation of British Railways and their Relationship to the U.S. Transportation Corps	85
Boiler Efficiency Diagram	86
Repairs to Railway Wagons	87
The Record of Bridge Clearances	88
Improved Conditions at an Engine Shed in India	89
Personal	91
Transport Services and the War	93
Stock Market and Table	100

DIESEL RAILWAY TRACTION SUPPLEMENT

The February issue of THE RAILWAY GAZETTE *Supplement, illustrating and describing developments in Diesel Railway Traction, will be ready on February* 1, *price* 1s.

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

NOTICE TO SUBSCRIBERS

Consequent on the paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:
Mondays to Fridays 9.30 *a.m. till* 5 *p.m.*
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Return of Argentine Railway Mission

AS was briefly recorded in our last week's issue, Mr. J. M. Eddy, Mr. H. C. Drayton, and Lord Forres, are returning to London after their three months' visit to the Argentine, where they have been discussing the problems of the British-owned railway companies with both the Argentine Government and the resident representatives of the railways. Before leaving Buenos Aires, Mr. Eddy is reported to have said that the negotiations had reached a stage where it was necessary for the directors to return to London to consult their boards and financial interests. He added that the members of the mission expected to return to Argentina during May or June of this year. In the meantime, the joint committee of inquiry into the condition of the railways has suspended its sittings. The fact that the mission intends to return, refutes reports that the negotiations have broken down, and there would seem no reason to believe that some measure of progress has not been made. The matters under discussion obviously are of such vital importance to the railways and to investors in the companies, as well as to the Argentine Republic, that Mr. Eddy could hardly be expected to discuss the progress of the negotiations while they were still current.

Mr. Gilbert Szlumper's Plan for Transport

A Central Control Board for the operation of all road, rail, canal, and internal air services, was put forward by Mr. Gilbert Szlumper, Director-General of Supply Services, Ministry of Supply, and former General Manager of the Southern Railway, when he addressed members of the Engineering Industries Association on Tuesday last. In his view it would be impossible for each form of transport to revert to its pre-war status, both internally, and also in its relationship to other forms of transport, and it would be disastrous if the Government should assume ownership and control of transport. Nationalisation would mean that a horde of black-coated young men, full of theory, would be playing at trains when their knowledge of transport was limited to the cost of a season ticket from their home town to Whitehall, and their experience of it limited to wondering why the 8.15 to town was late on a foggy morning. As will be seen from the report of his speech on another page, he suggested that road, rail, canal, and internal air services, should be brought under central control, and their revenues and expenditures into a common account. The central board would control regional executive bodies, which, in turn, would work through a number of district bodies. Alongside the central and regional bodies, he suggested transport advisory boards, which would determine policy.

American Viewpoint on British Railways

To the many thousands of American soldiers now in this country, the differences between British railways and those to which they have been accustomed in the United States must seem striking. Colonel N. A. Ryan, Chief of the Military Division, U.S. Transportation Corps, has been over here for many months, and has done much to promote the good relations between the members of the Transportation Corps and British railway officers. Among the many practical steps he has taken towards this end has been to deliver talks to American officers soon after their arrival in this country, explaining to them some of the reasons for the differences between British and American railway equipment and services, and in this issue we are able to give many of the points made by him. If, perhaps, he has over-simplified the block system working of trains and the wagon control arrangements in this country, he has erred on the right side, for if in some instances practice is in advance of what he indicated, it is better that his officers' expectations should be based on the minimum rather than on the maximum. Colonel Ryan's efforts should go far to make for better understanding between British and American transport providers and users, and with the thought and energy which he has devoted to this subject he has undoubtedly performed a service, the value of which will outlast the present emergency.

Bank Chairmen on Post-War Trade

The Chairmen of the principal banks have displayed unanimity at their recent annual general meetings on the vital necessity to the nation of a healthy post-war trade. They have also shown that they are well aware of the assistance which their institutions will have to accord, not only to the greater industrial undertakings, but also to smaller traders in the effort to re-establish their connections at home and abroad. Mr. Stanley Christopherson, Chairman of the Midland Bank, stated that in an attempt to foresee and prepare for the difficulties which would confront its customers in the period of transition from war to peace, his bank had established a committee on post-war business problems. Both he, and Mr. Colin F. Campbell, Chair-

man of the National Provincial Bank, and Sir R. Noton Barclay, Chairman of the District Bank, referred to the part which the smaller trader will play in the post-war trade. Sir Noton Barclay emphasised that the rehabilitation of our export business must be in the forefront of any reconstruction programme, and Mr. Rupert Beckett, Chairman of the Westminster Bank, said that although America would emerge as a more powerful competitor in the export field, Continental and Japanese competition would be much less formidable.

Linking Great Britain and Northern Ireland

The importance of Northern Ireland as a war base, to which considerable prominence has been given, lends interest to such details as are available for publication regarding the communications between Great Britain and Ulster. These are maintained by the L.M.S.R. steamers plying on two routes (Heysham-Belfast and Larne-Stranraer), and by the aircraft of Railway Air Services Limited, also maintaining two routes (Liverpool- Belfast and Glasgow-Belfast). Within recent years considerable expenditure has been incurred by the L.M.S.R. in the development and improvement of facilities for handling both passenger and freight traffic, and in the provision of new steamers with the most up-to-date accommodation. Some developments which took place before the war, notably the modern transporter cranes at the Heysham steamer berth, Donegall Quay, Belfast, and the conveyor equipment and movable ramp at Larne Harbour, have proved of great assistance in meeting special wartime requirements. The ramp which had been installed in connection with the motorcar ferry service, to enable cars to be driven on and off the steamers with the utmost dispatch, was of major importance. Probably the story of the steamship links across the Irish Channel, when it can be told in full, will prove to be a not uninteresting feature in Anglo-American co-operation.

By Air to Ulster

Belfast is fortunate in having an airport, opened in 1938, within a very short distance of the centre of the city, and connecting buses supplied by the Northern Ireland Road Transport Board take 10 min. on the journey. Railway Air Services Limited has maintained an almost uninterrupted service between Great Britain and Northern Ireland since its first timetable was introduced on August 20, 1934. At the outbreak of war the services were withdrawn, but in March, 1940, Isle of Man Air Services Limited (jointly controlled by the L.M.S.R. and the Isle of Man Steam Packet Company), to which we make further reference, page 96, restored operations between Belfast, the Isle of Man, and Liverpool. The service was withdrawn between Belfast and the Isle of Man after a short time, in consequence of passengers using it to evade certain restrictions on traffic between Great Britain and Ireland. In June, 1940, services were restored between Belfast and Glasgow, and between Belfast and Liverpool direct, and have since been operating regularly. Throughout the year, two return trips, one in the morning and one in the afternoon, work between Belfast and Liverpool, and also between Belfast and Glasgow. During the summer months an additional trip is given every afternoon on both routes. The flying time between Belfast and Liverpool is 1¼ hr., and between Belfast and Glasgow 1 hr. Air mail letters are carried on the morning service from Liverpool, and on the afternoon service from Belfast.

Recording Bridge Clearances

An important part of the work of railway civil engineering departments is the record of clearances, which determine the maximum dimensions of the rolling stock that may pass over any given route. It is chiefly the overline bridges and tunnels that impose the limits, and as, in course of time, lifting the track on to new ballast and the packing of sleepers may vary the distance between the rail level and the crown or sides of arches, and other conditions, such as minor subsidences, may also affect this relationship, it is necessary from time to time to go in detail over each route, so that minimum clearance diagrams may be kept up to date. Reliable clearance diagrams are also essential in the decisions which must be made as to the only practicable route when oversize loads have to be moved from one place to another. Hitherto much of this clearance recording has been done by means of measuring up and the use of a surveyor's level, with subsequent plotting to scale, but this is, of course, a lengthy operation. An article on page 88 describes the up-to-date method now in use in the United States by the New York Central System, which by means of a specially-designed car equipped with feelers not only obtains the profile of each overline structure, but also, by a pantographic device, transfers it direct on a 1 in. to 1 ft. scale to paper inside the car, so that all the necessary records are completed expeditiously in the car as the special recording train proceeds.

China's Railways After the War

There can be no doubt that in the post-war period there will be considerable opportunity for railway development in China. Mr. Chang Kia-Ngau, in a book entitled "China's Struggle for Railroad Development," recently published by John Day Company of New York, suggests that his country should embark on a ten-year programme involving the construction of 14,500 miles of railway. He estimates that China will require nearly 100,000 miles of railway, or almost ten times the present mileage. He also puts forward the view that purchases of imported materials should be on the basis of the investments of the respective exporting countries participating in the loans to that country. Our American contemporary, the *Railway Age*, suggests that the United States may have much used equipment which China could purchase cheaply, and which, as it would possess a life of from ten to twenty years, might serve China's needs admirably. On the other hand, Mr. Chang makes it clear that the Chinese wish their railway construction to secure a maximum of mileage at a minimum of cost, and the truest economy in this matter would surely be the purchase of long-lived equipment, apart from purely temporary expedients which might be necessary to tide over any interim arrangements.

Railway Wagons and Private Ownership

The Federation of British Industries has had under consideration a recommendation by its Transport Reconstruction Committee, relating to the return to their owners of vehicles of various kinds which have been requisitioned during the war. It has recently adopted a recommendation that: "the return to their owners of privately-owned vehicles, vessels, and aircraft which have been requisitioned for the purposes of the war should not be prejudiced by such requisitioning. If, however, the abolition of private ownership of any of these is contemplated or proposed, a proper inquiry should be held before any step is taken in that direction, to determine whether this would promote more economical and efficient transport, and be in the national interest." The F.B.I. has also agreed that a request should be made to the Minister of War Transport that in view of the importance of the matter to builders, owners, and industry in general, no steps should be taken to compulsorily acquire permanently, railway wagons, and so on, without full consultation with the interests concerned.

"The Civil Service and Industry" Criticised

The leader entitled "The Civil Service and Industry," in our issue of November 19, has elicited many favourable comments from readers, some of them railwaymen, others professional men in other walks of life. Some, however, point out that it deals mainly with that *corps d'élite* the Administrative Class, which is obviously by far the best element in the Civil Service. Those who know that service express the view that the great army of civil service clerks—who, by the way, can attain high rank—is even more imbued with *laissez faire* than the Adminstrative Class. With them time is no object, and it is much more important that every detail of correct routine should be followed implicitly than that improved results should be obtained. Four years of war have altered this state of affairs very little, it would seem. Even specialist and technical Government Departments are inflicted with this "dead hand" of administration, and several readers express the hope that it will never be the misfortune of British railways to be burdened with this infliction, even at ministerial level, in the enlightened and progressive post-war era to which we all look forward. We quote these opinions for what they are worth, but point out that they come from "usually well-informed sources."

What the Public Thinks

In these days of "Gallup polls" and other organised methods of obtaining cross-sections of public opinion, it can hardly be said that the general public is any longer as inarticulate as it was in days gone by when withdrawal of patronage was the most effective, if not the only, means of marking public disfavour. Recently an "Opinion Research Corporation" in the United States has been conducting an investigation of the public attitude towards the railways of that country. The result has been in the main friendly; the least appreciative have been the younger people, 63 per cent. of whom would travel by air if the rates were the same as those for railway travel. Of those canvassed, 89 per cent. regard the railways as having done a

good job in handling war traffic, and consider that passenger and freight rates are reasonable; also that the railways cannot be accused of profiteering in wartime. Although 31 per cent. offer no opinion, 69 per cent. believe that in the last decade the railways have been treated fairly, though 27 per cent. consider that in the future the Government should take a more favourable attitude. A majority opposes any post-war Government assistance to the railways, but only 7 per cent. of those recording opinions look for Government ownership of the railways. Present travel inconveniences are blamed on wartime congestion, but would be attributed to the railways if relief of congestion were not immediately accompanied by a commensurate improvement of passenger service. Whereas in the previous year only 16 per cent. of the voters were critical of the rudeness of railway employees, in this recent poll the criticisms on this head increased to 39 per cent. Segments of public opinion less favourable to the railways were voters in the far west and south, women, and the lower income groups.

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Repairs to Wagons

At present it is essential that the time occupied by wagons in undergoing repairs should be cut to the minimum, and on another page some details are given of the methods adopted on the Great Western Railway towards this end. The greatest possible use is made of the comprehensive facilities available at the wagon shop attached to the Carriage & Wagon Department. This wagon shop is capable of turning out 4,500 new wagons a year, and it can repair up to 20,000 vehicles each year. Vehicles to be repaired are placed in categories known as "first light," "shop," or "second light," and "heavy" repairs. Sometimes heavy receipts make necessary concentration on wagons requiring less work than the rest, and by following this course it has been possible, on occasion, to repair and put into traffic more than 500 wagons weekly for a period of several weeks. The governing consideration in the organisation of the repair arrangements is to make the most economical use of the available roads on which the work is done, so as to secure optimum output.

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A New C.T.C. Installation in America

The degree to which centralised traffic-control is being extended in the U.S.A., where the conditions are peculiarly favourable, is well exemplified in the installation brought into use last June between Daggett, California, and Las Vegas, Nevada, a distance of nearly 176 miles, on the Union Pacific Railroad. There are 38 station layouts with passing loops, with slightly varying arrangements of sidings; the entire section is controlled from one point, at which the control panel is arranged in U form and can be operated without difficulty by a single dispatcher, although at certain hours two are required. Traffic had been increasing considerably along the route in consequence of the war, and the equipment was installed to speed up the working. In twelve months the number of westbound loaded wagons increased by 95 per cent., and that of unloaded wagons travelling eastward by 130 per cent. Passenger traffic also showed a marked rise. There are several interesting technical details in the layout; some sidings have full equipment and others are partially fitted, according to requirements. Coded carrier working is employed for two sections of the installation, and straight d.c. working for the third (that nearest to the dispatcher) with telephone communication superimposed.

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Flywheel Effect

An inherent drawback of all engines of the reciprocating type is the cyclic fluctuation of the turning effort; when this exceeds the mean value, there is a tendency to accelerate, and when it falls short of the mean, there is a tendency to decelerate. In most applications of such engines, a flywheel can be provided on the crankshaft to absorb excesses of effort and supply deficits; this it does by accelerating and decelerating but, in virtue of its great mass, the needful speed changes are very small. A degree of flexibility must be provided in the transmission, as near as possible to the flywheel, to permit the latter alternately to advance and lag slightly with respect to the angular position it would have, were it to rotate steadily at the mean speed. In the absence of this flexibility a flywheel cannot function and might as well not be there. The driving wheels of a steam locomotive do not serve as flywheels; their mass is ineffective as a means of smoothing out torque variations because they have to revolve at a steady speed so long as they grip the rails and do not slip. The mass of the locomotive as a whole helps to even the pull at the drawbar, provided its connection with the train is not too rigid, but allows a series of almost imperceptible leaps and hesitations to be imposed on its steady forward progress.

Mr. Ellson's Record

WE refer elsewhere in this issue to the retirement of Mr. George Ellson from the post of Chief Engineer of the Southern Railway. In this editorial we will endeavour to record some of his achievements during the past sixteen years. At the time of his appointment in 1927 the Southern Railway had in hand considerable extensions of the electrification of the track in the suburban area, and a large programme of new works. Heavier engines were also being built and increased speeds called for. In order to keep step with the Board's policy of development, the permanent way, commencing with those lines carrying the heaviest traffic, was made the subject of special study, and very full investigations were undertaken as to the subsoil, drainage, ballasting, and all other track details. Chief among the problems was the necessity for accurate realignment of curves and adjustment of super-elevation. Special attention had also to be given to the reduction of the increasingly heavy top and side wear of rails, and the maintenance of a regular supply of good quality stone ballast, coupled with systematic riddling so as to improve drainage. The modernisation and development of the company's own quarry at Okehampton has materially assisted in this direction.

A critical survey of the rates of wear of rails indicated that, notwithstanding its high cost, substantial economies in maintenance could be obtained by the judicious use of high-manganese steel in special situations, and also by the employment of sorbitically-treated rails where the heaviest traffic occurred. It was further realised that very considerable savings could be obtained by building up the surface of worn crossings by electric or oxy-acetylene welding *in situ*. This practice was introduced in 1927, and nearly 50,000 of these reconditionings have been dealt with so far. Much experimental work was also done by welding together long lengths of rails for use particularly in tunnels. During recent years considerable use has been made of a rail joint specially designed to eliminate pounding, and thus effect economies in maintenance of track and rolling stock. About 26 miles of track have so far been laid with these joints, and the smoothness and silence of running thereon gives proof of their effectiveness.

Other permanent way developments include the introduction of mechanical tamping in special circumstances where this is more effective than shovel packing. Another innovation was the provision of a well-equipped weed-spraying train which carries sufficient chemical for 130 miles of track, and can operate effectively at speeds up to 30 m.p.h. Special attention has been paid to the adoption of alternative materials to Baltic Fir for sleepers, and extensive use has been made of steel sleepers, and, to a lesser extent, of concrete sleepers and blocks in non-electrified lines where no track circuits exist. As a result of the improvements which were introduced, the expenditure on permanent way maintenance in 1938 (the last year for which published statistics were available) showed a decrease of 4 per cent. compared with 1928, in spite of a rise of 15 per cent. in the cost of materials and a 26 per cent. increase in train mileage.

The desirability of giving the outdoor staff special instruction in modern principles and methods was also recognised, and in 1929 the first of a series of evening classes for permanent way men was initiated. The classes are held at the principal centres, being conducted by members of the technical staff, and have been continued every year except during the blitz period of 1940. Thousands of men have attended, and the lectures and practical exercises have proved of great benefit both to the company and the men themselves. It is of interest to record that during his Presidency of the Permanent Way Institution in 1928 and 1929, Mr. Ellson offered a special prize for the best paper on "The Technical Education of Permanent Way Men," and the P.W.I. has since instituted examinations and diplomas for its members.

Many new works were carried out before the war under Mr. Ellson's direction, including civil engineering work in connection with the electrification of the main lines to Windsor, Brighton, Worthing, Sevenoaks, Eastbourne, Hastings, Portsmouth (*via* Guildford), Alton, Bognor Regis, Littlehampton, Portsmouth (*via* Horsham), Gillingham (Kent), Maidstone, and Reading, as well as numerous extensions in the London suburban area. New railways between Wimbledon and Sutton, and between Motspur Park and Chessington, were also constructed, and the opening of the train-ferry dock at Dover in 1936 brought to a successful conclusion a difficult undertaking, in which several novel methods of construction were called for. Extensive improvements have been carried out at the company's principal goods depots, including the construction of several large warehouses. Eleven locomotive depots have been rebuilt and coal handling and water-softening plants installed, and ten carriage-washing machines have been constructed. Over

200 passenger stations have been built, reconstructed or modernised.

During the past sixteen years 120 bridges have been constructed on new sites or built on sites to replace existing structures. Among some of the larger works are: the new bridge and viaduct at the Lewisham loops; the viaduct at Durnsford Road Flyover, Wimbledon; and the bridge over Southwark Street, at Blackfriars. A feature of the more recent bridge designs is the encasement of the girders in concrete, which eliminates the cost of periodical painting, reduces the weight of metal, and minimises vibration. Precise methods of testing bridges have been evolved, and many bridge superstructures have been tested in order to check the calculated stresses.

The increased traffic resulting from electrification called for a complete revision of the signalling system on many of the lines concerned, and during Mr. Ellson's regime 3- and 4-aspect automatic and semi-automatic colour-light signals have been installed on about 100 route miles, including nearly the whole of the London—Brighton main line.

A number of works have been carried out to provide additional facilities for wartime traffic, including new loops, sidings, and halts. Many specially strengthened emergency headquarters and traffic control centres have been constructed, and some 2,500 shelters have been built for the staff over the whole system. An entirely new traffic control installation has also been provided.

It is, however, the remarkably prompt repair of war damage with which Mr. Ellson's name will be specially associated. The Southern Railway system is particularly vulnerable because of its proximity to enemy-occupied territory and to the dense network of lines, many of which are carried on viaducts, in the London area. Nearly three thousand "incidents" have occurred, including shell fire from enemy coastal guns. Thanks to the comprehensive repair organisation set up before the war and the resourcefulness and perseverance of all concerned, damaged tracks, stations, depots, bridges, viaducts, tunnels, and signalling installations were speedily repaired, enabling services to be resumed with the minimum delay to essential war traffic and very little inconvenience to passengers.

We are pleased that we cannot conclude this somewhat categorical review of Mr. Ellson's sixteen years' work as Chief Engineer of the Southern Railway by wishing him a long and happy retirement, for the very satisfactory reason that he is not retiring yet. He will continue for two years as Civil Engineering Consultant to the Southern Railway. We do not forget the appreciative references he has made in his speeches on several occasions to the value of the work performed by the technical press. We have never found Mr. Ellson secretive, but always most willing to provide facilities for the preparation of articles relating to new works, new methods, or experiments. In fact, he would himself from time to time suggest subjects for articles. In that respect he recalls to our mind another outstanding railway engineer, the late Sir John Aspinall.

Railways, Canals, Roads

ABOUT the middle of the 19th century a fable was spread around that, as soon as railways were extended on a large scale, their owners deliberately laid themselves out to ruin canal undertakings. It has been pointed out again and again that the story is grossly exaggerated and that not infrequently the railways were pressed to take over canal properties at exorbitant prices. Yet the canard survives and was repeated on December 30 last by a special correspondent of *The Times*, who was discussing "Problems of Civil Aviation." His article raised the question whether shipping companies are the proper bodies to develop air travel and then dragged out the old bogy in the sentences quoted below:—

"The parallel with the railway companies which, had they been entrusted with the development of motor transport, might have treated the roads as they treated the canals, is, however, not altogther relevant. The shipping companies are concerned only with alternative sea and air routes for fast passenger traffic. Less wealthy travellers and all cargo that is not exceptionally light, valuable, or perishable will long continue to go by sea. Nevertheless, the analogy is one which will be drawn and which the British Government cannot ignore."

On January 5 Mr. Philip Runciman, Chairman, General Council of British Shipping, sent the following vigorous retort to *The Times*: "The comparison of shipping and air with rail and canal to which your correspondent refers is wholly irrelevant. The action of the railway companies in appointing an expert to organize their air routes shows that they have no intention of stifling air traffic, and the idea that shipowners would wish to do such a thing is ludicrous when one considers that the only results would be to leave the field open to foreign air lines."

We wholeheartedly agree with Mr. Runciman. Undoubtedly the invention of the railway locomotive put a stop to the development of canals except in districts where geographical and commercial conditions favoured water transport, but the change has been entirely in the public interests. So far from attempting to strangle motor transport the railway companies were pioneers in experimenting with road vehicles for the conveyance of both passengers and goods. They are now the largest private owners of road vehicles in the country and also have large interests in many bus and road haulage concerns. Their investments in road transport undertakings yield a satisfactory return, whereas in 1938 they lost £65,570 on the 992 miles of canals which they control; the mere cost of maintenance exceeded the gross receipts from the canal properties. Obviously, there is little inducement to the railways to try to foster canals—the most rigid of all forms of transport—when they will be able to exploit the flexibility of rail, road, and air services after the war and to link up these services with one another and with their own steamship lines to Ireland, the Channel Islands, and the Continent.

Legislators and the Coal Industry

FOREIGN visitors to this country have never failed to tell us that our police are wonderful. They have never paid any such tributes to our legislators; presumably they have not been so favourably impressed. Yet if we examine the actions of our legislators when they handle any problem we find them infinitely more interesting, more intricate, more whimsical, and unexpected than anything our policemen can achieve. There was a time, for instance, when the coal industry was prosperous, producing cheap coal, paying good dividends, and affording higher rates of wages than the generality of other industries. Then came the first world war and although it was evident to everyone that prodigious quantities of coal would be required to supply our own and our allies' needs, coal miners were encouraged by our legislators to volunteer for the forces and soon we were threatened by a coal famine. To remedy this state of affairs they increased wages, and immediately the coal famine got worse; so they increased them again, with the same results, and again and again—with the same results, until finally putter lads were receiving £11 a week in wages, the output per man dropped by 25 per cent., and our customers in the Scandinavian countries, who were being charged up to £15 a ton for coal, began to replace their steam plant by water power.

However, the war ended and our legislators, having found themselves in increasing difficulties with the coal industry, on which they had spent some eighty million pounds of the taxpayers' money with such wonderful results to the cost of coal, decided to quit the business. Unfortunately, in the peace negotiations which followed they arranged that France, hitherto one of the best customers for British coal, should be supplied with German coal free of cost; not only that, but they sponsored the establishment of the Polish coal industry without contriving any safeguards against its competitive effects in the Scandinavian countries. The British coal industry was thus left to face a supremely difficult position, but our legislators, after awarding themselves earldoms, baronies, knighthoods, and C.B.E.'s, joyously appealed to the country for votes on their wonderful record.

Left more or less to itself, the coal industry gradually increased the productive efficiency of the mineworker from about 14½ cwt. per man per shift to 23½ cwt., lowered the costs of production, and finally, due to the loss of markets which were bartered away as before-mentioned, produced more coal than was wanted. Our legislators' proposed solution to this problem was the ingenious one of closing a great number of pits and providing other work for our miners. With its usual obstinacy and lack of foresight the industry resisted this plan, but consented to adopt a quota system which kept the pits open. Then the second world war broke out; Poland, Holland, Belgium, and France collapsed, and the British coal industry was required to match itself against practically the whole of the coal mines of Europe in sustaining our armament output. So our legislators promptly made arrangements for our miners to be dispersed into the fighting forces and any old where so that, very surprisingly, our munition industries began to run short of coal.

Now everyone knows that anyone with a good memory is somewhat of a nuisance, and very often a bit of a bore, so much too wonderful to be either of these two things, our legislators decided to forget about what had happened in the past and decided that the proper thing to do to get more coal was to increase wages. For some incalculable reason, however, the coal output dropped, so they did it again. As the same thing

happened once more, just as in the previous war, they very cleverly thought of something else—that there weren't enough pits and not enough miners. Our policemen couldn't have achieved anything like this. Very stupidly the coal industry had left large quantities of what is called outcrop coal in certain areas as it was erroneously supposed that gasworks, central electricity stations, and industrial boiler plants, which have been designed for coal, could not be run on a mixture of coal and dirt. With their superiority of brain power, however, our legislators were able to laugh aside this silly prejudice and to show that dirt, after being expensively transported in wagons, gave immense satisfaction to all concerned. But this did not altogether solve the shortage of manpower in the pits, so they very astutely argued, "Instead of sending people into the army where we already have so many trained pitmen, let some of the men who are being sent into the army for which they have been partially trained, volunteer for the pits." Due, no doubt, to some unreasonable streak of obstinacy in the British character, however, volunteers failed to come forward in sufficient numbers, so this excellent plan was frustrated. This was capital, as it afforded just that opportunity our legislators wanted to display a masterstroke. Over-ruling an entirely footling, if solemn, objection that existed in the country about having lotteries for other than charitable purposes, they gaily instituted one; those who drew the winning tickets became the happily smiling Bevin boys who now form one of the mainstays of our daily news. Brilliant, what! Just that genial rollicking touch of the 18th Century press gang about it to set off the genial spirit of modern democracy and the civil service.

Our foreign visitors should no longer look to our policemen when they wish to enjoy the wonderful; rather should they study our legislators and enjoy the quintessence of the marvellous; there is nothing to equal them, and we doubt if even heaven contains such as these. It is a pity that in spite of all this planning the coal output is still going down.

"Chief Engineer"

IN an age of specialisation, there is a tendency for old words of wide meaning to become too broad to convey with precision a modern meaning to modern minds. Such a word is "engineer," and the correspondence published in our columns in 1938 clearly indicated the wide diversity of interpretation placed upon it in different industries, and in various parts of the world. We are reminded of this at the present time by the decision of the Southern Railway to term Mr. V. A. M. Robertson, the new head of its Way & Works Department, the Chief Civil Engineer, whereas Mr. G. Ellson, who retires next week, was the Chief Engineer. The L.M.S.R. had previously made this change in title, but the heads of the Way & Works Departments of the G.W.R. and L.N.E.R. are still designated Chief Engineer. Until the recent changes in the London Transport organisation, all engineering matters came under the control of an Engineer-in-Chief, and his immediate assistants had titles clearly indicating their responsibility for a particular branch of this wide profession—Civil, Mechanical, and Electrical. Similar distinctions are preserved under the new organisation, but with direct responsibility, and not *via* an Engineer-in-Chief.

Without delving too deeply into ancient history, it is sufficient for our present purpose to record that writers of the 16th and 17th centuries accepted the engineer as a military engineer, as engineering had then become exclusively a military pursuit. In the latter part of the 18th century the industrial revolution introduced engineering to industry and resulted in the distinctive designation of civil engineer, without any idea of differentiation between statics and mechanics. Early railways (like canals) therefore appointed their Engineer, and under him was a Locomotive Superintendent (such as Brunel and Gooch on the G.W.R.). With the increasing importance of motive power, the latter developed into an officer of equal rank and took away from the Engineer the responsibility for mechanics, leaving him to confine his attention to statics. A corresponding division in other industries has now tended to limit the term Civil Engineering to this side of the profession.

As a chief officer, the Locomotive Superintendent (responsible also for the Carriage & Wagon Department) gradually blossomed forth as the Chief Mechanical Engineer—a title first used, we believe, on the London & North Western Railway. The Great Central Railway made the change in 1902, and the Great Western Railway as recently as July, 1916, when the Engineer became the Chief Engineer, and the Locomotive & Carriage Superintendent became the Chief Mechanical Engineer. Now, it seems that the narrowed view of what today is civil engineering—already firmly accepted in railway practice—is spreading in railway nomenclature.

The Early Chit

WE write this week of a document familiar to all our readers now in the Services, and doubtless among the memories of many who served in the last war. When the soldier, sailor, or airman proceeds on leave of any duration he must first fill up a pass, declaring him to be released as from a time described as "A.D. Hours" on a certain date. The letters "A.D." stand for "after duty" and are capable of various interpretations, depending largely on the goodwill of officers in charge of sections. The pass, duly signed by a person in authority, is then deposited in the guardroom, where it remains as a frozen asset until the magic time arrives when it may be claimed. It at once becomes the consuming passion of the owner of the pass to hasten that time as much as possible. To this end he sets about composing and writing an early chit. These labours being satisfactorily concluded, in due course an officer finds on his desk a scrap of paper announcing (shall we say) that L.A.C. Smith, having completed his duties for the day, has permission to collect his pass and proceed on leave. A space, and frequently the guidance of a dotted line, is provided where the officer may sign his name to what purports to be an expression of his own thoughts.

Flattered with the confidence of his power to sway even the grim denizens of the guardroom, the officer usually signs, though at times he will send for L.A.C. Smith and ask him why he considers he merits an early release, and at what time his conscience will allow him to feel that he has fulfilled his boast of having "completed his duties for the day," reinforcing his questions with such axioms as that duty for members of the Services never ends, and that leave is a privilege liable to instant withdrawal. At this crisis L.A.C. Smith calls the transport system to his aid, passionately declaring that unless he can get away at two-thirty in the afternoon he is doomed to spend the night in a waiting room at Crewe, Doncaster, Swindon, Basingstoke, or other noted junction, until such time as the operations of the timetable restore him to his anxious family. Probably (and on this L.A.C. Smith banks heavily) the officer will have little time to check such statements, and even should he be disposed to do so, it may easily be pointed out that the orderly room timetable in which he conducts his researches is six months out of date. The officer, in short, will usually sign, and after a brief interval which is a credit to the British railways, L.A.C. Smith will be sitting down to tea and toast at home instead of arriving twenty minutes late for supper, which was the bleak prospect in view had he been compelled to complete his daily round.

On one occasion we were asked by an officer of our acquaintance to check the claim of one of his men for release at lunch-time to reach Manchester by seven-fifteen. We found that it could be done, although it involved a six-mile bus ride, four miles on a branch line, and nearly two hours in a main-line stopping train before joining the express. The alternative method, hitherto adopted by Mancurians of the same camp, was to wait until the late afternoon and catch a through train from the neighbouring town. We communicated our findings to the officer, who emitted a cry of pleasure like that of Archimedes starting in triumph from his bath—or some old-time mariner discovering the North-West Passage—and dashed away to pack. We found later that he lived in Manchester himself.

DEFERRED MAINTENANCE.—American railways are concerned because track and rolling stock are being badly overworked, and the supply of labour and materials is inadequate even for normal upkeep, the proportion of profits which should be laid by for overtaking arrears of maintenance, when the strain is relaxed, is being taken by excessive taxation. It is assessed that the aggregate value of this deferred maintenance, spread over all the railways of the United States, is in the region of **$250,000,000** a year for track and structures alone, apart from rolling stock, whereas the total laid by to meet this need, during the first nine months of **1943**, was only **$543,469**. The United States Treasury will not permit the railways to make adequate deductions for this purpose from their taxable income, and they are therefore compelled to show what they consider as fictitiously high profits, and to pay proportionately high taxation. At the same time necessary maintenance work gets more and more into arrears, and with little or no balance in hand to meet the cost when it becomes possible to carry out the work. Application is being made by the railways to Congress to permit them to set up reserves for deferred maintenance, and to deduct the amounts so laid by from taxable income. Relief is also sought from the provisions of the Revenue Act which permit the Bureau of Inland Revenue arbitrarily to reduce the figures representing railway investments by large amounts of alleged but purely theoretical accrued depreciation of track and structures.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

The Railways War Effort

London, E.C.4.
January 17

To the Editor of The Railway Gazette

Sir,—In your excellent issue of January 14 three paragraphs appear, headed:

The L.M.S.R. War Effort (page 45).
Record G.W.R. War Traffic (page 45).
L.M.S.R. Traffic in 1943 (page 50).

Though these notes are interesting, it is difficult for an outsider to appreciate the significance of some of the figures. I venture to suggest that the public would get a clear idea of the magnitude of the railways' war effort if, as far as practicable, all traffic statements covered the operations of the four main-line companies. The paragraph on page 50 styled "U.S.A. Rail Traffic in 1943" is effective because it covers the whole of the American railways.

Yours faithfully,
CIVIS

Decauville Track

London & North Eastern Railway
Castlegate, Thorpe Road,
Peterborough. January 11

To the Editor of The Railway Gazette

Sir,—With reference to the letter from "Metropolitan" in your issue of January 7, I was engaged during the last war in laying what was then called "Sixty-Centimetre Track" and from various sources compiled a notebook of tables and other data for use in the field. Soon after the outbreak of the present war this notebook was forwarded to the Secretary of State for War, and was later returned to me with the intimation that it had been copied for future reference by those concerned.

It is possible that the information may be of use to your correspondent, and a communication addressed to the Under-Secretary of State, the War Office, London, S.W.1, quoting B.M. No. 17591 (Q.M.G.9), 16.1.1940, and headed "Trench Tramways, Royal Engineers," may assist.

Yours faithfully,
C. C. COMMANDER,
Chartered Surveyor, F.A.S.I.

American Travel

Hatch End, Middlesex.
January 21

To the Editor of The Railway Gazette

Sir,—Perhaps I may be permitted a few lines of space in which to carry a little further the argument with "Statistician" as to the relative amenities of British and American passenger rail travel. He has got in a shrewd blow as to the time when passenger traffic first began to decline in the U.S.A., but when he states that "private care diverted a growing amount of business as time went on"—in Great Britain—he modestly refrains from any reference to the effect of private car travel on U.S. passenger revenue. Surely this is the main key to the American position. If private motoring had been as cheap from the earliest days in this country as it was from the first introduction of cheap Ford cars in the States, would British railways have succeeded in keeping "a good grip on their business"?

To come to "Statistician's" third paragraph, is it really the aim of British railways to recover all the 1s. 6d. passengers? Some of us thought that the whole purpose of co-ordinating rail and road traffic was to develop and increase long-distance traffic on the railways, and to let the roads—especially by the aid of the railway-associated bus services—act as feeders to the trains, so reducing the number of stops and increasing average rail speeds.

This, it seems to me, is precisely what the American railways have been trying to do. "Statistician" doubts if their energies in this direction are making any profit, and asks if I can produce figures. Certainly; and my authority is *The Railway Gazette*, in its issues of September 11 and 25, 1942. The Champion of the Atlantic Coast Line, between New York and Florida, earned $5·34 a mile over a 1,328-mile route in 1941; the Afternoon Hiawatha, which during August of that year carried 38,472 passengers in both directions over the 422 miles between Chicago and the Twin Cities, earned $3·87 a mile over the year; the City of San Francisco and the City of Los Angeles earned $3·80 and $3·30 a mile respectively over routes of 2,272 and 2,299 miles; the Twin Cities 400 of the Chicago & North Western $3·72 a mile; the Mercury of the New York Central $3·68 a mile; the Silver Meteor of the Seabord Air Line, also between New York and Florida, $3·54 a mile; the Milwaukee Morning Hiawatha $3·41 a mile; and a number of others between $3 and $2 a mile over the year.

The Rocky Mountain Rocket of the Rock Island & Pacific cost $887,481 and has earned an annual average income of $430,550, or 48 per cent. on the original investment; the whole of the Rocket streamliners of this company are calculated to have earned an average of 36 per cent. on the cost of the equipment. The Morning Daylights of the Southern Pacific, between San Francisco and Los Angeles, carried 1,309,342 passengers over a 470-mile route in the first four years of their operation. The New York Central's Mercury, originally running between Cleveland and Detroit, earned $1,125,425 in the first year of its extension to Chicago, which required the introduction of a second train. The revenue from these and many other streamliners was steadily rising even before the U.S.A. became involved in the war, and the trains were definitely creating new traffic, as the British streamliners also did during their short life.

In this connection "Statistician" states that the Americans have only one streamline train for every 1,160 route miles of track in the United States. What he does not say is that the aggregate monthly mileage of the American streamliners, even by the end of 1941 (since then further increased) had grown to 1,468,690, or 6·4 times the total American route mileage; whereas the aggregate monthly mileage of the five British streamliners—Coronation, Coronation Scot, Silver Jubilee, West Riding Limited, and Bristolian—worked out at 3·3 times the total British route mileage. Despite the claim of "Statistician" that such trains are "expensive stunts," one wonders if the L.N.E.R. regrets such a "stunt" as the Silver Jubilee, which is claimed to have earned a steady 12s. 6d. a mile.

In the course of travelling I often get into conversation with American officers, and we generally manage to agree that in peacetime each country has features of its railway travel of which to be proud. In some of these features Britain is ahead; in others, with little doubt, the United States has the lead. Mr. Bernard Newman sampled some of the American specialities, and was only foolish in that he overstated a good case.

Yours faithfully,
CECIL J. ALLEN

[It might be contended that though these super trains make a good showing, it is at the expense of other trains. Is not the real test to take the receipts and expenditure of the whole passenger train service between given points over a period before and after the introduction of the super services?—Ed. *R.G.*]

Lord Brabazon on the Future of Railways

Middlesex. January 17

To the Editor of The Railway Gazette

Sir,—Most readers, I imagine, will agree with the comments made in your issue of January 14 on Lord Brabazon's article, "How we can improve the railways." With your permission I should like to add a few words about station amenities which are mentioned in your editorial and also in the quotation from *The Observer* of December 26, which appears in The Scrap Heap (page 36) of your January 14 issue.

Judging from an experience, which goes back to last century, station accommodation, as a general rule, is adequate for the number of travellers using each place. It is difficult to see how the railway companies could hope to earn more revenue by a lavish expediture on station buildings. In the past too much railway capital has been put into bricks and mortar. Bus companies seldom provide shelters of any kind, but leave their passengers to wait by the roadside without any protection from the weather. Yet in many districts people prefer the bus because it gives a frequent service at regular intervals, whereas trains are few and far between. After the war the railways will stand a good chance of regaining a lot of passenger traffic if they recast a large number of their timetables on the basis adopted by the Southern Railway for its electrified services.

Yours faithfully,
DRUMMER

U.S.A. Railways and Post-War Air Transport.—The Association of American Railroads has appointed a committee of eleven presidents of leading railways in the U.S.A. to consider what is to be the general policy of the railways in regard to entering the field of air transport after the war. The railways concerned are the New York Central, Boston & Maine, Baltimore & Ohio, Pennsylvania, Southern, Atlantic Coast Line, Illinois Central, Atchison, Topeka & Santa Fe, Missouri Pacific, Union Pacific, and Chicago, Burlington & Quincy, so that the entire country is well represented. As already indicated in *The Railway Gazette*, the Missouri Pacific Railroad and its independently operated subsidy, the Texas & Pacific Railroad, have applied for powers to develop joint post-war air lines over the territory they cover.

The Scrap Heap

TWICE AS POWERFUL AS ROYAL SCOT

Shortly after the existence of a remarkable new aero-engine, the Napier Sabre, had been made known, Colonel J. J. Llewellin, then Parliamentary Secretary to the Ministry of Aircraft Production, announced that it developed "more power than the Royal Scot." That was not an over-statement, for whereas the Royal Scot locomotive has an output of roughly 1,100 h.p., it can now be disclosed that the Sabre develops a maximum of 2,200 h.p.—*From "The Times."*

* * *

"BILLY BROWN" ESCALATOR COMPETITION

The winner of London Transport's £10 prize for a Billy Brown couplet asking escalator passengers to "Stand on the Right" is Mr. E. F. Worley of Borehamwood. His winning entry forms the last two lines of the verse:—

Here's another bright suggestion
Standing right prevents congestion
On the right it's "Stand at Ease"
On the left it's "Quick March, Please."

A small poster embodying the lines will appear at Underground Stations almost immediately and, it is hoped, will have a salutary effect upon all "Standers on the left." Very heavy traffics are being carried on escalators at the present time. A recent test discloses that as many as 106,000 passengers use the escalators at one station daily. Over 7,000 entries were received, 25 per cent. of them from members of H.M. and Allied Forces. Details of the competition were given in our November 5, 1943, issue.

* * *

PROFESSOR JOAD ON SMOKING IN TRAINS

Replying to the question, "As an inveterate smoker do you agree with non-smoking carriages?" Professor Joad in *The Sunday Dispatch* replied:—

Yes, of course. Other people's smoke is disgusting to some people at all times, and to all people at some time; to me, for example, during recent weeks, when I have been suffering from a sore and irritable throat, expressing itself into a continual liability to painful and tearing coughing at the slightest provocation, so, inevitably, I seek a non-smoking carriage.

I am sorry, of course, for those who can't or won't smoke. Is it Puritanism? A simple denying to themselves of pleasure because it *is* pleasure. . . . But I am still sorrier for non-smokers who, being affected and afflicted by this bitter deprivation of a pleasure that most of us enjoy, are liable at any moment since the war to be subject in their non-smoking carriage to the intrusion of half a dozen soldiers puffing Virginia cigarettes in their faces.

I am always answering questions, but here, incidentally, are two to which I would like to know the answers.

(1) Why should the war have completely abrogated the ordinary courtesies of travelling, of which disregard of the comfort of non-smokers is an example?

(2) Why will cigarette smokers—as an inveterate pipe smoker I hate the smell of cheap Virginia cigarettes—insist on holding them in their fingers for several minutes at a time so that the smoke, instead of being wafted into the nose of the smoker, who presumably likes it, is carried into the eyes and nose of his nextdoor neighbour, who presumably does not, and as often as not has gone into a non-smoking compartment in order to avoid it?

* * *

GRAIN (WHISKY MANUFACTURE)

In the House of Commons on January 19, Mr. Boothby asked the Minister of Food whether, in the interest of the industry as a whole and particularly of the export trade after the war, he would now authorise the distillation of a limited quantity of whisky, and was he aware that if no whisky was made fairly soon we should be deprived of any stocks of mature whisky?

Colonel Llewellin replied that there were other competing claims for the ingredients.

Sir Leonard Lyle then asked the Minister to what extent there was to be a reduction in the supply of whisky; and whether this was due to shortage of ingredients, diminution of stocks, or restriction of output.

Colonel Llewellin replied that cereals had been allocated for the production of whisky since the end of 1941 and releases had had, therefore, to be reduced. He was not at present able to state the precise rate of the releases which would be made this year, but it was unlikely that they would differ greatly from the rate in 1943.

Sir L. Lyle: Is it not highly important to maintain the national beverage in Scotland, particularly as Scotland is the backbone of England?

Mr. McKinlay: Will the hon. Member allow Scottish Members to speak for Scotland?

Mr. Boothby: Is it not a fact that in its present diluted condition this beverage does no harm to anybody but at the same time brings great comfort to large numbers of people?

* * *

Of 512 tons of tickets recovered from London Transport buses, trams, and trolleybuses last year, 159 tons were clean tickets recovered from the boxes provided. The remaining 353 tons were swept from the floors. A rainy day means the loss of many tons of pulp, for many tickets thrown on the floor are carried into the streets and trampled underfoot.

* * *

Vegetables grown on London Transport farms during 1943 included 430 tons of potatoes, 265 tons of cabbage, 30 tons of root vegetables, 8,000 marrows, 440 dozen lettuces, and 5 tons of tomatoes. Some 37,000,000 meals were sold at staff canteens; 8 new canteens placed in commission during the year brought the total to 148.

* * *

TAILPIECE

If you should feel inclined to scatter
The things that do not seem to matter,
Check the desire,
And do not thrust them in the fire.

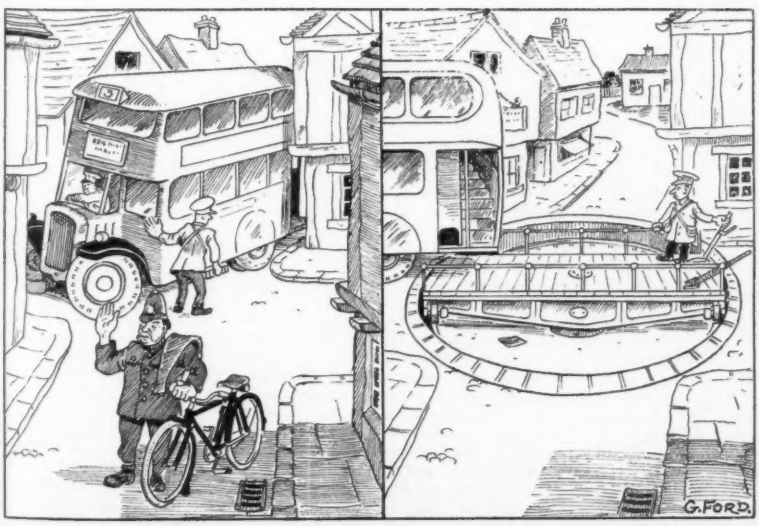
Especially paper. Save it all.
Deposit pieces large or small,
Re-pulp or rag,
In the appropriate salvage-bag.

The reason is not far to seek.
Remember, you who week by week
These pages scan,
The things you cannot use your country can.

E. C.

MENU
Hors d'œuvre Royale
Dindonneau Rots a l'Anglaise
Choux de Bruxelles Nature
Pommes Fondantes
Tarte aux Pommes et Custard
To meet the Rt. Hon. Lord Leathers, C.H., Minister of War Transport, to mark the completion of sixty-four 2-8-0 Class Engines during 1943 in the works of the
SOUTHERN RAILWAY
CHARING CROSS HOTEL
Wednesday, 19th January, 1944

The menu at the luncheon on January 19, when Lord Leathers congratulated Southern Railway workers on building locomotives for war traffic. **(See page 96)**



Tight corner

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

AUSTRALIA

Victorian Train Service Reductions

As the result of a temporary stoppage in the delivery of coal supplies, combined with a depleted stock of coal, drastic reductions in country passenger and goods train services had to be brought into effect by the Victorian Government Railways during last September. Under the new arrangements, main and branch line passenger services were reduced by approximately 50 per cent. Many of the main-line services were reduced to a service of 3 and 4 days a week only; others were discontinued altogether.

Restrictions designed to limit passenger traffic were introduced. Victorian passengers travelling from Melbourne were required to have their tickets endorsed with the date and time of the train by which they intended to travel. Reservation of seats, except on the Interstate expresses and Mildura trains, was discontinued, and sleeping cars were withdrawn from the Mildura line.

Goods for transit from Melbourne were accepted at the depot only between 8 a.m. and 10.30 a.m. daily and certain commodities could be accepted only if they were for defence services.

In an effort to improve the situation coal was sent overland for some months, but the railway consistently suffered by not receiving a due allotment of supplies brought by coastal shipping. To conserve to the maximum the reserve, considerable quantities of wood were burned by locomotives.

The locomotive fuel problem of the Victorian Government Railways was dealt with in *The Railway Gazette* of December 3, 1943, page 568.

CANADA

Railway Post-War Prospects

Judge R. V. Fletcher, Vice-President, Law Department, Association of American Railroads, in the course of an address delivered in Montreal, said that if railways were able to furnish a "fair degree of expedition in the movement of traffic and at low cost," there was no reason why they should not continue as the principal agency of transport in the post-war world. Railways "furnished the only means whereby any article of freight traffic could be moved to any part of the country on any day of the year, at rates which were relatively below the cost of any other form of transport." He had no doubt that in the post-war period, the railways would be in competition with road vehicles, waterways, and airlines. With the last-named, he admitted, they could not hope to compete in the matter of speed; but, on the other hand, the airlines could not compete with railways in the case of cost. He advocated the adoption of a policy which would ignore to a certain extent, at least, the question of the welfare of the railway, air, or road transport industries, and would respect the public interest as paramount.

In Judge Fletcher's opinion, should any one of the transport agencies undertake to invade the province of another, through competition leading to the handling of traffic at less than cost, or with less than a fair profit, certain individuals might gain a temporary advantage, but in the long run the result would be to weaken the transport system and to bring chaos into an economic area in which order should prevail. In the U.S.A., there was being advocated a policy which would permit the organisation and functioning of transport companies, privileged to use the railways, the highways, the airlines, and the waterways, in such way as to move traffic as consignors might desire, and to meet all the needs of commerce in a manner which would add immeasurably to the total of efficiency and economy.

Speaking of the plans which railways were making for post-war economy, Judge Fletcher said that the Association of American Railroads had created the Railroad Committee for the Study of Transportation, which had been at work for more than a year. It had created also fifteen or sixteen sub-committees, each charged with responsibility for studying carefully every aspect of particular phases of the problem. The railways were giving attention to technological improvements in the construction of rolling stock. It was more than likely he said, that large sums of money would be spent on the construction of goods wagons of light weight and high capacity.

Quoting statistics to show that the railways of the U.S.A. were likely to come out of the war period with a substantial amount of cash, Judge Fletcher said that in 1942 they had collected $7,500,000,000 in revenue, of which amount, after payment of all expenses, taxes, and fixed charges, $900,000,000 had been available for dividends, additions and betterments, and reserves. Only $200,000,000 had been paid out in dividends. Cash resources of the U.S.A. railways in the post-war period probably would be at least $1,500,000,000.

UNITED STATES

Flood-Protection Works

A considerable amount of regrading work has been and is being carried out by railways to lift various lines above the maximum levels reached by rivers in the mid-summer floods of 1943. The Missouri Pacific Railroad recently placed contracts for three such projects, on lines adjoining the Missouri River near Lupus, Arve Spur, and Cole Junction, Missouri, at a total estimated cost of $190,000. Some 115,000 cu. yd. of earthwork will be involved, with reconstruction of bridgework, in raising tracks to a maximum of 5 ft. above their previous levels.

Another Missouri Pacific regrading, near Wooldridge, Missouri, although of 2 ft. lift only, will involve 150,000 cu. yd. of earthworks and will cost $200,000. Near Riverton, Louisiana, the same company is laying a diversion of its existing line, with a new bridge over the Ouachita River, 942 ft. long, to include three 165-ft. spans, the centre one of which will be a vertical lift bridge; this work, which includes 447,500 cu. yd. of earthwork, is to cost $345,000.

The Congressional Derailment.

The report of the Interstate Commerce Commission has been issued concerning the derailment of the Advance Congressional of the Pennsylvania Railroad on September 6 last (of which a full account appeared in *The Railway Gazette* of December 10, 1943, page 581). This section of the Congressional runs non-stop over the 214·8 miles from Washington to Newark. The train concerned had travelled 141·4 miles in 126 min. (including service slacks) to Shore signal tower, 2·9 miles east of North Philadelphia passenger station, when the front bogie of the seventh (out of sixteen) coaches became derailed at 56 m.p.h. This vehicle and all behind it were thrown off the line; of the 79 persons killed and 129 injured, the majority were in the seventh and eighth coaches, the first of which was thrown against a signal bridge with such force as to move it bodily 22 ft. out of position. This sheared right through the superstructure of the coach; the superstructure of the eighth also was badly crushed.

The immediate cause of the accident was the failure of the left front journal of the bogie previously referred to; this was broken off at an average distance of 7½ in. inward from the collar, and the broken edge remaining attached to the wheel assembly had been ground to an oval shape by contact with the journal edge, although there was no evidence of cutting. The journal box was demolished, but a recovered portion of the outer end of the bearing showed no lining metal remaining on the bearing surface. Tests and analyses revealed that the journal had been heated to a temperature of at least 900°, and that the surface temperature had reached some 1,400°; the shallowness of the structural change also made it clear that the bearing had heated very rapidly. The front wheels of the front truck had been mounted on the axle in 1937; the wheels and axles had been fitted to the coach and the journals repacked in June, 1943; the four-wheel bogie had one-piece cast-steel side frames with 5½ in. by 10 in. journals. All the usual inspections and routine lubrication had taken place, and the railway's rules as to observation of the condition of the train, both by its own staff, those of trains passed *en route*, and of staff at stations and on the line, had been observed. It was not until a minute before the accident occurred that the crew of a yard engine on an adjacent track had seen fire and smoke coming from the journal, and they took immediate steps to have the express stopped, but it was then too late. The cause of the accident is thus an unexplained mystery, and could not be attributed to neglect; in his report, the I.C.C. commissioner made no recommendation as to any change in rules on operating practice of the Pennsylvania Railroad.

ARGENTINA

Professional Meetings

At a meeting of the Argentine & River Plate Centre of the Institute of Transport, held in Buenos Aires on October 5, a paper by Mr. F. B. Lowry on "The Reciprocal Uses of Railway Wagons in the Argentine Republic" was read and discussed. The Chairman of the Centre, Mr. G. C. Bonner, presided.

The October meeting of the Buenos Aires Association of the Institution of Civil Engineers was held at Lomas Athletic Club at Links Station, on the Buenos Ayres Great Southern Railway, by the courtesy of the club committee. The Chairman of the Association, Mr. D. G. MacCormack, B.Sc., M.Inst.C.E., Chief Engineer, Central Uruguay Railway, presided, and, after an informal luncheon, opened a discussion on "The Sources of Water Supply in Argentina," based on five short papers, treating of various aspects of the subject, read by members of the Association.

At a meeting of the River Plate Branch of the Institution of Mechanical Engineers, held in Buenos Aires on October 13, two papers, dealing, respectively, with "Waste Prevention" and "The Reclaiming of Scrap," by Messrs. J. A. M. James and G. B. W. Dominy, were read and discussed. The committee was elected for 1944, as follows: Chairman, Mr. P. J. Dawes; Honorary Secretary, Mr. E. I. Mayne; Members: Major R. K. Hubbard, and Messrs. A. T. Nickson, W. F. Nixon, and O. Steven.

Wartime Organisation of British Railways and their Relationship to the U.S. Transportation Corps

Some notes of a lecture delivered to newly arrived American Transportation Corps Officers in this country

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DEALING with the subject assigned me, "Wartime organisation of British railways and their relationship to Movement Control and Transportation Corps, S.O.S., E.T.O.U.S.A.," first, I believe it would be expedient to give you a few fundamental impressions based on my experience when I first arrived in England now 21 months ago. I came by plane in about a day's time, and naturally, as everything in life is based on comparison and contrast, and my journey being so short in time, when I arrived at Bristol passenger station here in England to take a train to London, I was quite surprised at the apparent small size of the railway equipment. I have now been here to the extent that all railway equipment looks quite normal and natural.

By giving the subject a little study one can readily accept the British standards of equipment size, and can see why American large equipment and wholesale production of transportation through use of the larger American unit would not produce an efficient serving of this country. To begin with, the country is very densely populated! there is a continuous string of small towns, with small businesses; land is very expensive on which to locate warehouses, storehouses, and other industries. Distances are short from the production centres to consuming centres; it is only a very short trip in any instance; therefore what follows is purely economic.

The small merchant caters to a small trade; land is very expensive, so he has a small plant; due to a limited business he cannot finance a 70-ton wagon of goods; due to nearness of production centres there is no point in carrying such a large stock, therefore he gets a 10-ton wagon, at a warehouse that will take a 10-ton vehicle, or smaller at the door or spot. The railways are quite old, and when construction started they were built with much greater permanency than ours, with platforms and clearance restrictions we in a newer country haven't got, and due to clearance as well, as bridge capacity, a large-capacity wagon such as we have could not be adopted, even though the use of it is not economically sound as I have tried to outline above.

Even though railway equipment is small, because of an economic system their methods and equipment fully meet their needs, and their operation and performance by and large is very efficient. They are carrying their heavy war burden under battlefront conditions perfectly, and have an excess capacity for still more. We like them and admire their methods, and efficiency, and friendliness, and their all-out efforts to help us. At times, especially when we first came, we must have proved very exasperating, but with the British stolidity they put up with us, and we saw the light eventually, and they have not been averse to learning from us. It has proven to be a great team.

The railways are the backbone of the British Isles—they are the largest private undertaking; capital principal investment amounts to £5½ billion. They own highway carrier companies, many boat lines, air lines, etc. They are the world's largest dock owners, owning dock harbours and wharves at 76 places. They are the world's largest hotel owners, totalling 53 in number. The Southern Railway is the world's largest suburban electric train system. This one railway carries to and from London, on a representative day, 753,000 passengers. The world's most intensively worked steam railway system is the L.N.E.R.—Liverpool Street. The world's busiest railway junction—Southern Railway, Clapham Junction, with 2,500 trains in 24 hours. Their operations are much more intensive than any we are familiar with. All in all, they are doing an outstanding job.

Now for a little information on their wartime organisation. There are four principal railway companies in the British Isles, the Great Western, Southern, London & North Eastern, and London Midland & Scottish. Then there is the L.P.T.B. which is the tube and bus service in the London area. These general area lines are the result of an amalgamation some years ago of many lines in England, in order to produce better transport and enable the railways to eliminate some competition and strengthen their position; they put into effect a plan somewhat similar to what the Eastman or Prince plans proposed in the States, but which were not adopted. Through this amalgamation in England the railway transport is very fluid; one can reach almost any point *via* parts of several routes, all of the same or different railways, which is a great advantage in wartime to reduce density on any one line, and keep supplies and personnel moving; even though one part of the route may be blocked through enemy action or accident. Immediately after this present war started the Government rented the railways of Great Britain for a fixed sum of £43,000,000; the officers and employees all became the agents of the Ministry of War Transport, which is the Government Ministry set up to control the railways as well as other transport. Incidentally the Government takes all the revenue, which in 1942 amounted to almost once again the rental.

The British as well as all their allies pay freight charges, based on a wartime simplified tariff. The technical operation of the railways is in the hands of the civilian officers of pre-war days, now agents of the M.O.W.T., and they have a minimum amount of interference with their technical control from the Ministry. We can liken their M.O.W.T. to our I.C.C., except our I.C.C. exercises a much tighter legal-like control in many instances.

Although I, through my acquaintances, and predicated on my past experience as a railway man, deal directly with the railway Managers, if we desire anything formally we must handle it through the Railway Executive Committee, and they handle it on up to the Ministry of War Transport, and we of the Transportation Corps approach the Ministry of War Transport direct to support our request.

After arrival here when we began to move our people and supplies in the British Isles, we discovered that as there was only one transport agency (M.O.W.T.) and this had to serve all forces of the Allies, it was necessary to negotiate and promulgate an Inter-Service agreement. It took many long meetings and much friendly treatment to produce the following, which we feel is our Bible. In one meeting I recall very vividly that in a discussion I told Brigadier Napier (now Major-General) of Movement Control, one of my best friends and supporters, his draft of the agreement was dictatorial, and he told me mine was Soviet, and through the merging of the many schools of thought we produced, and had ratified by our respective Generals, the following, which I shall read, as on its contents is based our entire operating procedure:—

"In order that the Movement demands made upon the ports and railways in the United Kingdom by the Admiralty, War Office, Air Ministry, and H.Q. E.T.O.U.S.A., shall not conflict, and that Movement arrangements shall be made with knowledge of all service requirements, it has been agreed that—

(*a*) The previous organisation of Movement Control in commands, districts, and ports shall continue with Naval, Military, R.A.F., and American Officers wherever the traffic justifies their appointment.

(*b*) These Officers shall be directly responsible through normal channels to their own service heads (P.R.T.O., Admiralty; Director of Movements, War Office; Director of Movements, Air Ministry; and Chief of Transportation, U.S., S.O.S.), for the efficiency with which the traffic of each service is handled; subject, however, to the responsibility of one movement officer nominated by inter-service agreement, according to the predominant traffic in each command, district, or port, for the co-ordination of executive arrangements affecting more than one service.

(*c*) Similarly, although each service head of Movement is separately responsible within his own department for the efficiency of Movement they are jointly responsible to the Principal Administrative Officers Committee for the efficiency of service movement as a whole. To this end, movement policy should be evolved by agreement between the service heads of Movement, any necessary co-ordination of executive arrangements at this level being effected, as at present, by the Director of Movements, War Office.

(*d*) While adhering to the general principle that Movement Officers shall be primarily concerned with their own service traffic, there should be no watertight compartments or avoidable duplication of staff and every effort will be made to foster a 'combined service' spirit."

The war has brought about in this country drastic changes in the flow of traffic which the railways were not constructed to meet. There is now a far larger army than there has ever been before, which has to be fed, equipped, and maintained. The railways have undertaken the major burden of the transport involved, including the periodical leave given to the services. Since the beginning of the war, apart from the much greater traffic carried by the regular timetable services, more than 100,000 special trains have been run for the transport of troops and their equipment.

Because of the vulnerability of the east and south-east ports, much shipping has been diverted from the east to the west coast. This has increased the traffics of the railways serving the west coast and disturbed the natural flow of freight

traffic. Ships also arrive at the ports in convoys, numbers arriving simultaneously instead of in a steady flow. In order to release the ships as quickly as possible, heavy strain is placed on the railways by having to work the empty wagons into and the full wagons out of the docks with the utmost speed.

Before the war, large tonnages of goods and minerals were conveyed coastwise by cargo vessels. Much of this traffic now goes by railway. The conservation of petrol has also meant that a heavy volume of traffic which normally would be carried by road is now sent by rail.

A large number of Government factories have been built, and others are in the course of building. The rail traffic involved in this new construction is colossal, in addition to the large volume of the factories already in production. Great Britain's steel output is higher than ever before. This has increased the freights forwarded by railway, as steel-making requires the conveyance of large quantities of coal, coke, lime-stone, iron ore, and pig iron. A single furnace producing 100,000 tons of pig iron a year requires 120,000 tons of coke, 260,000 tons of ore, as well as huge quantities of limestone and other commodities. As supplies of iron ore cannot now be obtained from Sweden and other European sources, this has required the development to the maximum possible capacity of the iron-ore mines in this country, and for the railways to carry the ore.

These changes in the flow of traffic have taxed the railways severely, but by increasing facilities at strategic places, eliminating bottlenecks at junctions and marshalling yards, laying down more tracks, and re-routing so as to avoid the more congested lines, traffics have been kept moving.

All of you can help the railways meet their job by turning wagons around and using good sound sense in organising work. To cite a case that occurred recently; the Superintendent of the Line of a railway, a job comparing with a Chief Operating Officer at home, called me personally and said the R.T.O. at one of the ports had ordered a standard-size refrigerator wagon to move a shipment, and the temperature must be kept at 40 degrees. In Great Britain—and here again local conditions, this time climatic, enter into the picture—refrigeration is not as advanced as at home, and the R.T.O. was making a request impossible to comply with. In digging into it, the package contained serum, and weighed 4 lb. We disposed of it with a soldier with some dry ice, and pointed out to our fellow the foolishness of his request. This is just mentioned here to indicate the necessity of thinking when problems confront you, instead of picking up a telephone and having some executive do the thinking for you.

Many improvements are being made after joint consideration between the British railways, British army authorities, Transportation Corps authorities, American army, and the R.A.F., which materially benefit and influence the output of the various properties. The handling of the despatch of the trains in Great Britain is a very complex thing, due to so many lines which can be used as secondary or principal lines. Three of the railways have a centralised control office, and the fourth one still has the divisional control. The railways have a very elaborate radio control system which can be used in the event of lost lines of communication. Before the opening of the war the British railways handled for the account of the owners, many privately-owned railway wagons; however, these have all been pooled, and while there has been some tightening of railway wagons, of which there is approximately a total of 1,250,000, there has been sufficient equipment to handle business offered. There is, however, a great necessity for conserving this equipment, and a prompt release is required if a wagon shortage is to be averted. Other pooled items of interest are—408,000 wagon sheets, 219,000 wagon lashing ropes, 17,318 containers.

Naturally, you can readily appreciate that it would be impossible to handle our traffic efficiently in the United States with the British equipment and methods of operation. The British do not have a despatching system as we have in the United States; they handle all their trains on a manual or automatic block system. In other words, the trains are handled from block to block by towermen. It is not as simple on the British railways to find out the location of a train as it is on our railways, due to the fact that they do not have a despatcher's office where the train movements are kept on a sheet, and when an inquiry is made they have to take it up with some block station down the line to see just how the train was running at that point. Also, they do not have a central wagon record office for tracing purposes.

You will find in your association with the British railways that they will go the limit to help you, and they are so willing to be of assistance that it is necessary to guard our requests to the extent that we will not abuse their interest and effort and anxiety to be of help to us.

There is a point which I want to stress here, and that is, that until you have become thoroughly familiar with all of the operating conditions in this country, you are in no position to criticise either the British or your own organisation as to what is taking place. You cannot judge operating efficiency here on the basis of standards with which you are familiar in the States. Many things which you feel should be done and could be done may actually be impossible to accomplish, because of conditions of which you have no knowledge.

In the Transportation Corps we have adopted this policy: We want all of our people to feel that if they have any constructive ideas, we will give them every consideration. We never want to have a static organisation. Anything that we can improve we propose to do, but we do not want a lot of suggestions which clearly show when they are submitted that the individual does not possess full knowledge of his job; neither do we want our people sounding-off at way stations and telling their contemporaries how much better a job they can do if they were handling it, and thereby antagonising people who have the best intentions in the world. Be fair about these things. Where there is a chance to do better and you know you can do better, let your boss know and show him why. If you cannot prove it to the boss, then forget about it.

Boiler Efficiency Diagram

(See folding plate opposite)

MUCH attention is now being given by British railway companies to the saving of coal. The locomotive aspect has already been extensively discussed in these columns, but railway use of fuel is by no means restricted to this direction. Many of the numerous workshops, warehouses, hotels, and other establishments consume large quantities of coal in stationary boilers, to say nothing of the several power stations operated by the companies for electrical generation. In all such cases the efficiency of the boiler plants is under continuous review through records and periodical reports, and the operating staff is encouraged to keep close watch on day-to-day conditions with the object of economising fuel to the greatest possible degree. For such personnel, however, the calculation of boiler efficiency is not always quickly possible and the diagram reproduced as a folding plate in this issue has been designed to make even hour-to-hour results practicable with a minimum of time and trouble and as a matter of easy routine. Its use avoids the necessity for consulting steam tables or for carrying slide rules, and yet secures remarkable accuracy. For frequent use it is recommended that the diagram should be reproduced on a still larger scale.

The diagram, which was designed by Messrs. H. C. Golder and R. B. Page, is based on the recognised Callendar's Steam Tables and requires only the successive running out of horizontal or vertical lines.

To illustrate the use of the diagram, a guide line has been incorporated in it. This may be briefly explained as follows: Commencing with the temperature of the steam on the left-hand vertical ordinate, in this case 655° F., a line is struck horizontally until it meets the required steam pressure line, in this case 300 lb. per sq. in. From the point so obtained, a vertical line is then drawn to cut the feed-temperature line (120° F.). Thence a horizontal line follows through to meet the calorific value of the fuel, which is here shown as 11,800 B.Th.U. per lb. The next step is another vertical line to meet the lb. of water being evaporated per lb. of coal (7·4), whence a horizontal line to the right-hand vertical ordinate enables the efficiency to be read off at 79·2 per cent.

As a check on the accuracy with which the diagram arrives at a result, the same example may be worked out in full, using Callendar's Steam Tables. This calculation appears thus:—

$$\text{Efficiency} = \frac{1260{\cdot}3 \times 7{\cdot}4 \times 100}{11{,}800} = 79{\cdot}15 \text{ per cent.}$$

With a larger-scale diagram it would be possible to read off the second place of decimals, but paper restrictions have made it necessary to publish the diagram in a reduced size, and this has necessarily impaired its accuracy to some extent. Nevertheless, in its present size, as published, it is easy to get a very close idea of the efficiency of any boiler plant within the limits of the scales employed, and to observe the differences resulting from changes in any one or more of the conditions. Shortly we propose to publish another diagram, of a similar nature but having lower-range scales, so as to be applicable to boiler plants which are not operating with such high steam temperatures, or with saturated steam. This diagram will be applicable to locomotive boiler tests, as well as to the most numerous class of stationary boiler in the smaller depots, for heating and similar purposes.

Repairs to Railway Wagons

Methods adopted on the G.W.R. for reducing to a minimum the time wagons are out of service

Open goods wagon repaired with home-grown hardwood

WITH the intensification of the war effort, railway traffic continues to expand, and the problem of keeping wagons in service is acutely topical. By efficient arrangements for loading and discharging wagons at forwarding and at receiving points, standstill or terminal user time is being reduced to a minimum, and the availability of wagon stock thereby increased. But important as this is, it is only one aspect of the problem, for wagons are subjected to wear and tear, and require periodical attention, which entails withdrawal from service. Thus, it is essential that the minimum time should be occupied in undergoing repairs.

Repair jobs are not all of the same kind, and the need for dealing differently with individual wagons is fully appreciated at the principal manufacturing and repairing centre of the G.W.R. Instead of working to a long-term and well-defined programme, as in the case of new wagon stock, repair jobs, as received, are classified on a broad basis. At the same time, the greatest possible use is made of the comprehensive facilities available in the commodious wagon shop attached to the Carriage & Wagon Department. This shop has its own electrically-operated sawmill, and is near a timber store. The wagon shop can turn out 4,500 new wagons a year, and repair upwards of 20,000 vehicles annually.

The procedure followed in dealing with wagons "green-carded" for repairs is an interesting one, and conduces to sustained and orderly activity. On arrival, wagons are examined, and receive a distinctive mark to denote one of three categories, namely, "first-light" repairs, "shop" or "second light" repairs, or "heavy" repairs, after which they are assigned to a given road.

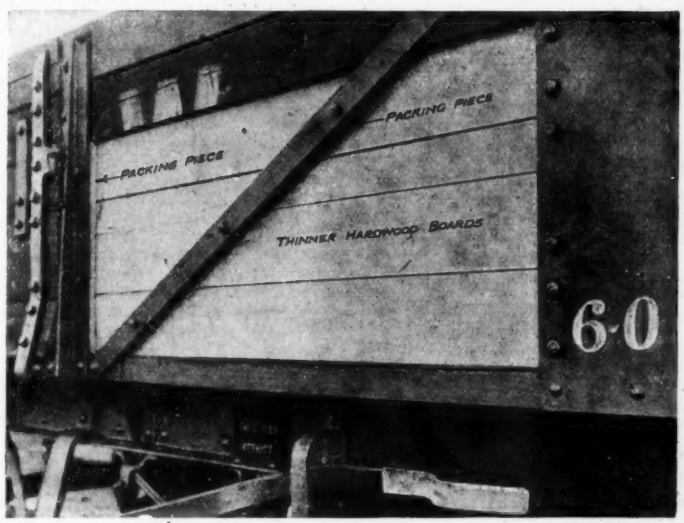
Three outside roads, each holding approximately 30 vehicles, are used for first-light repairs. First-light repairs, although they may consist only of minor but necessary jobs, serve to illustrate why emphasis had been placed on the need for dealing differently with individual wagons. Some wagons in this category may, for example, have end woodwork, quartering, doors, or flooring requiring repairs. A systematic inspection of axlebox-oil pads and journals may reveal that pads require renewal, and the boxes must be oiled up. Adjustments or light repairs, when required, are made to buffers, drawgear, or brakes. Wagon floors are often encrusted with tar or grease, and when this is the case they are thoroughly cleansed.

Shop accommodation available for shop-light and heavy repairs consists of five roads holding 25 standard open or covered wagons, and nine roads each with a capacity of 10 vehicles. Shop light repairs comprise jobs involving rather more work than first-light repairs. Included in the former category are repairs to worn or damaged woodwork, and minor repairs to underframes, lifting and changing wheels, side springs, axleboxes, oil pads, etc. Buffing and drawgear are examined and repaired, if necessary, as is also brakework. Additionally, wagons are painted (this applies to-day to covered vehicles only), and re-lettered. Heavy repairs involve a complete overhaul, and usually entail repairs to underframe components such as solebars, transoms, headstocks, diagonals, and longitudinals, also repairs to covered vehicle roofs, and re-canvassing. When considered expedient, buffers and drawgear are removed and replaced, as is flooring, sheeting, or other woodwork. Wagons in this particular category have usually to be lifted, so that wheels may be replaced and to enable other work to be performed in connection with axleboxes, oil pads, shields, and side springs. When the overhaul is complete, the wagon is virtually as good as new, and it remains only for it to be painted and re-lettered.

There are certain restrictions at present on the painting of freight rolling stock, and as a further wartime measure thinner timbers are being used for wagon repairs. One of the methods introduced to effect economy in the use of timber is exemplified in the acompanying illustrations.

The weekly inflow of "green-carded" wagons cannot be maintained at a uniform level, but it is ordinarily possible to deal with every wagon, whatever the repair job, within a short time of receipt. There are times, however, when heavy receipts enforce a modification of the normal procedure, and priority is accordingly given to wagons requiring less work, that is to say, first and second-light repairs. By following this course, it has been possible on occasion to repair and put into traffic more than 500 wagons weekly for a period of several weeks. The governing consideration is to secure an optimum output.

As already indicated, in one part of the shop are five roads with a total capacity of 125 vehicles, and here a special system is adopted known as "cross-shop working." Instead of each working gang being allotted to one road, some of the vehicles on the road are assigned to woodworkers and the others to ironworkers, and as the former complete their job the wagons are turned over to the latter, so that work is carried on continuously throughout the road. As the woodworkers and ironworkers complete their share of the necessary work and move to another line of vehicles, painters and writers get busy, and in a remarkably short time the wagons are available. The order of roads for shunting is made known by means of indicator boards placed at certain points in the shop. Cross-shop working engenders a healthy competitive spirit, apart from the practical advantage of releasing an entire road of vehicles at one time.



Close-up showing how thinner repair boards are used

We are indebted to the *Great Western Railway Magazine* for the foregoing details and illustrations.

The Record of Bridge Clearances

A pantographic device is used by the New York Central System in recording bridge clearances to scale

IN the year 1941 a central clearance bureau was established by the New York Central System, to deal with all matters relating to track clearances for the whole railway, which previously had been dealt with independently by the various districts. The value of the new method is measured by the fact that whereas, before the bureau began to function, to get information from several districts to decide the possibility of using a certain route for some exceptional load required three or four days, the same information can now be obtained from the collected records in a matter of hours. The bureau is in charge of the clearance engineer of the system, assisted by a clearance inspector. Considerable improvements have also been effected in the mode adopted for measuring clearances.

For many years the N.Y.C. lines east of Buffalo have used a specially-equipped clearance car for taking the clearance measurements, in which a pantograph has been used for reducing these measurements to a smaller scale; on other parts of the system, a car equipped with a template was used, and all the measurements from this template were taken by hand and transferred to the prescribed scale to paper in the drawing office—a laborious procedure. The car, which was a 36-ft. flat wagon to which the pantograph clearance device had been fitted, and which was without any shelter for the measuring staff, reached the end of its service life in 1935, and was withdrawn.

On the formation of the central clearance bureau in 1941, the satisfactory experience that had been obtained with the pantograph car resulted in a decision to make this the standard method of clearance measurement, and to equip a recording car in which it would be possible to make all the necessary records in the car itself, to a scale of 1 in. to 1 ft. This involved the design of a pantograph which would reduce the measurements direct to the prescribed scale in a single operation. The pantograph is a device consisting of four links arranged in the form of a parallelogram with flexible connections, mounted in position on a pivoted connection at the midpoint of the main link, and free to rotate about this point. One of the other links is also pivoted at this point, and has a short extension with a free end, known as the tracer; another of the links is joined to one end of the main link, and has a long extension, also with a free end, known as the pointer. The opposite ends of these two arms are connected by a fourth link, which is parallel to the main link. When the pantograph is in use, the free end of the pointer arm is moved to various points on the profile to be reproduced, and at each of these points the free end of the tracer arm makes a mark on the recording sheet, at the corresponding position, but to a reduced scale.

The new car was originally a combination baggage-smoking coach. The body at the front end was cut back to a point level with the centre of the leading bogie, on the centre-line of which, to obtain the correct relation between the track and each structure, on curves as well as on straights, the clearance unit has been mounted. This end frame is supported on a 6-in. H-beam, which forms the base, and a 6-in. vertical I-beam in the centre; this carries the bearing for the pivot of the main link of the pantograph. The margin of the end frame, which conforms in shape to the maximum permissible dimensions of rolling stock, is of 6-in. channels, vertical at the two sides, and bent to the necessary curve at the top, which is in the shape of a clerestory roof.

Projecting from the end frame all round is a series of fingers, 112 in all, and all hinged at the point of attachment to the frame. The side fingers, when in line with the face of the frame, project 7 ft. 6 in. from the centre line of the car, which is the normal minimum constructional clearance; the ends of the fingers round the top of the frame in similar fashion extend to the limit of the normal clearances for overline structures. A line drawn through the ends of the fingers, that is to say, represents the standard clearance diagram for the system. When the car is in action, if it passes under or past a structure which has the correct or a greater clearance from the track, the fingers are left undisturbed; but any scant clearance has the effect of pushing one or more of the fingers out of their normal position, in line with the end frame, to an angle to it. In this position the operator, who works on the end platform of the car, clamps the finger or fingers concerned until the record of the position of these fingers has been made to scale by the pantograph.

The pantograph is mounted on the end frame of the car. The main link of the pantograph is pivoted at the centre to the vertical I-beam already mentioned, and has a flanged roller at each end, which runs on a circular track formed of a curved stainless-steel channel. Thus the main link is free to rotate as the pointer arm is moved to various positions, when clearances are being measured. At the outer end of the pointer arm is a slender wooden cross-piece, at right-angles to the arm, by means of which the tip of the pointer arm is brought into line with the deflected fingers, one by one. Inside the car there is a second and smaller pantograph, which is used to make the final reduction of the measurements to the prescribed 1 in. to 1 ft. scale. The tracer arm of the larger pantograph is attached to the pointer arm of the smaller, and this connection has to be made through the end wall of the car.

A revolving stainless steel disc has been mounted on the axle of the main pivot, and in the plane of the end wall, and in this a slot, extending the full width of the disc, is provided to receive the connection between the two pantographs. As the pointer arm of the outside pantograph is moved to different positions, the end of the tracer arm, sliding in the slot in the disc, moves correspondingly, causing the disc to rotate.

When taking measurements with the pantograph, the operator stands on a railed platform 6 ft. above the floor of the car; this staging is built above the end platform that has been made available by cutting back the car body to the centre line of the bogie, and the raised platform is reached from the end platform by means of a steel ladder. Inside the car a wooden drawing board is fixed on the inner side of the end wall, and to this is tacked the paper on which the measurements are recorded. As the pointer arm is moved by the operator from one deflected finger to another, punch marks are made on the paper at the respective locations of the end of the tracer arm of the small pantograph.

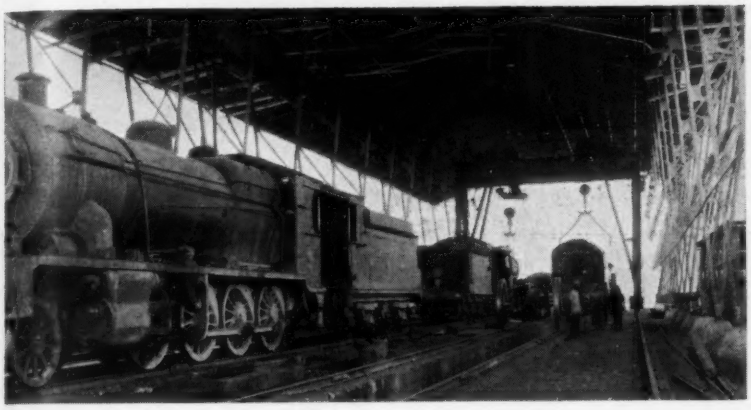
When the impressions for a structure—overline bridge or tunnel—are complete, the recording sheet is removed from the drawing board, and the profile of that part of the structure which has fouled the fingers, in their fully-extended position, is traced from it on to tracing cloth ruled in inches and tenths. The general practice is to incorporate on the same sheet of tracing cloths all the structures in any given district, and the completed

clearance sheet is then sent to the Central Clearance Bureau in New York for filing.

The operator of the small pantograph works on a platform 3 ft. 5 in. above the floor level of the car, and a higher platform, 4 ft. 8 in. above the floor, is provided for the use of an observer, who keeps a look-out ahead through a shallow cupola in the car roof. Other facilities in the car include a drawing-office table and accessories, a washroom, shower, lavatory, and other conveniences for the engineering staff, together with quarters for the train crew at the rear end of the vehicle. For movement of the car from one part of the system to another, it is incorporated in regular passenger trains, with all the fingers folded out of action. When the measurements are being taken, it is pushed by a locomotive at a speed of about 4 m.p.h. For the foregoing details we are indebted to our American contemporary, the *Railway Age*.

Improved Conditions at an Engine Shed in India

A large shelter recently completed at an important depot on the North Western Railway (India)



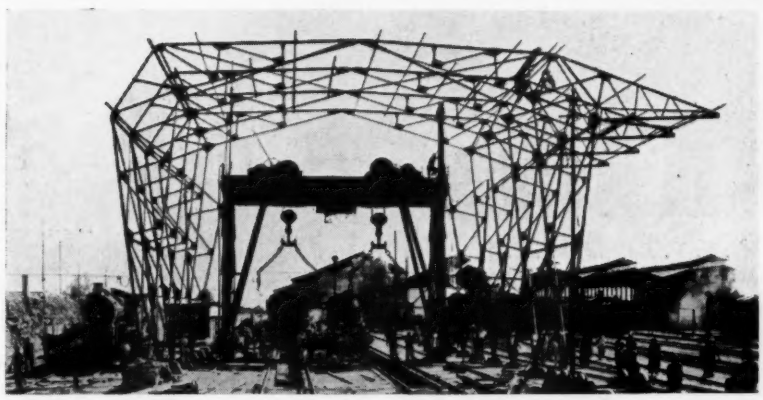
AT the majority of engine sheds in the north west of India, intermediate repairs (that is, scheduled overhauls between visits to the workshops) are carried out in the open. Rainfall is insignificant and causes a minimum of interruption to the work; but the heat and glare of the mid-day sun has made it almost impossible for men to carry on during the middle of the day and it has been the practice to knock-off during the hottest hours in the summer.

At one of the largest engine sheds on the North Western Railway in Sind, a large shelter has been completed recently, covering the repair lines and spanning an 80-ton Goliath crane. This shelter, which gives complete protection from the mid-day sun, is the first of its kind in India. It consists of a series of 3-pinned arch trusses and has been fabricated from a number of trusses discarded from the saw-tooth roof of an abandoned workshop.

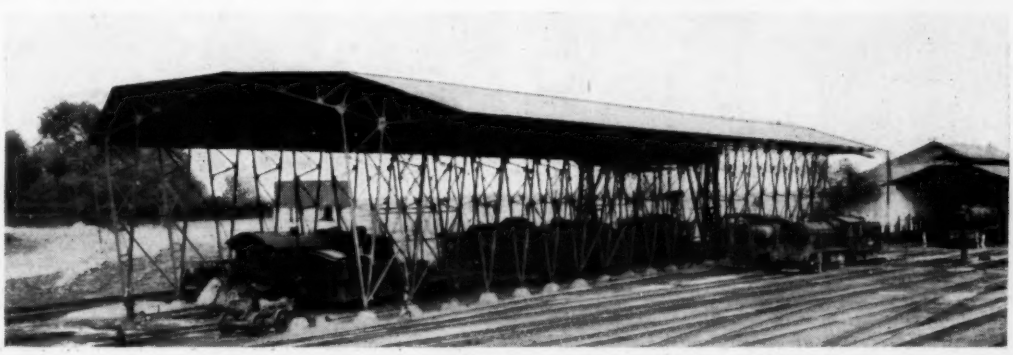
The shelter, 300 ft. long and 76 ft. wide, consists of twenty-one 3-pinned arch trusses (4 discarded roof trusses to each 3-pinned arch, plus an extension on the south side) spaced at 15-ft. centres. The span of each arch is 50 ft. and the central pins are 39½ ft. above the bottom ones. The somewhat unusual design was adopted for two main reasons. It involved very little re-fabrication of the discarded trusses and it occupied a minimum of space on the ground, where the columns taper to a narrow width at the pins at their bases. This latter point is of considerable importance in a busy yard where obstructions between the tracks are undesirable.

The shelter has been designed to withstand a wind force of 30 lb. per sq. ft. The total weight of ironwork in the structure is 170 tons, which is equivalent to 16·7 lb. per sq. ft. of area covered. The shelter is covered with galvanised corrugated-iron sheeting.

The whole of the work from drawing-board to finished shelter has been carried out by the engineers and staff of the bridge branch of the North Western Railway, under the direction of Mr. A. M. Sims, C.I.E., Chief Engineer.



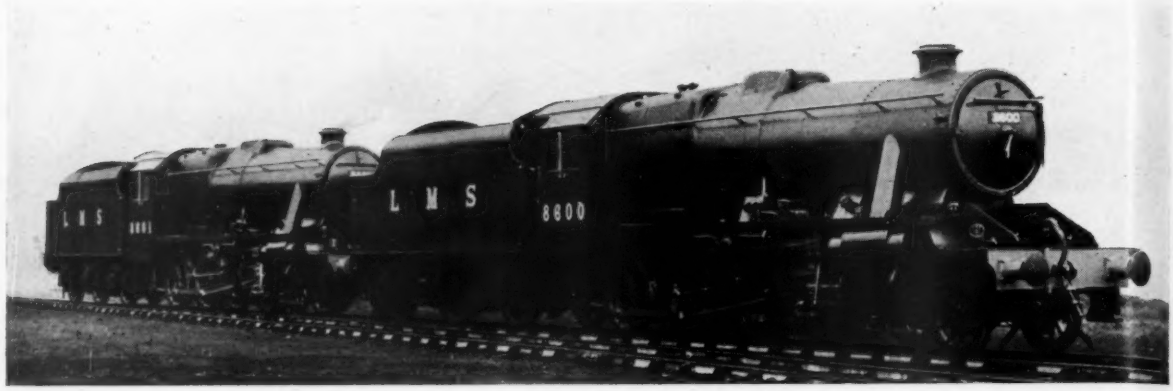
The three-pinned arch trusses of the shelter over the repair lines. A view taken while the work of erection was in progress



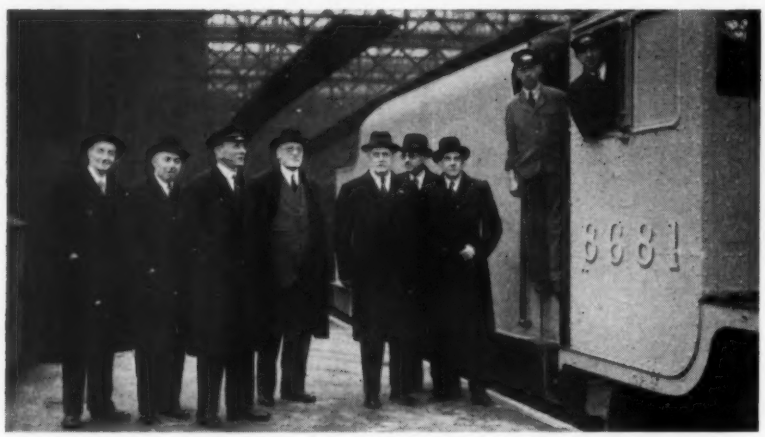
The completed shelter from the south-west

L.M.S.R.-Type Locomotives Built in Southern Railway Works

(See article, page 96)



Two of the 64 special utility locomotives built by the Southern Railway to Government order during 1943. These 2-8-0 locomotives are of L.M.S.R. type and bear the initials of that company



Mr. O. V. Bulleid, Mr. E. J. Missenden, Lord Leathers, Sir Alan Anderson, Mr. R. Holland-Martin, Sir Alan Mount, and Sir Cyril Hurcomb at the inspection

The nameplate, bearing the initials of the two railways, which is carried by the locomotives

The Minister of War Transport, Lord Leathers, attended a luncheon at the Charing Cross Hotel on January 19, after inspecting one of the locomotives, and thanked Southern Railway workers for their help in providing motive power for war needs

Lord Leathers, Minister of War Transport, in the cab of one of the locomotives

Lord Leathers conversing with Southern Railway employees

RAILWAY NEWS SECTION

PERSONAL

Commander Sir Charles Craven has been elected a Director of the Midland Bank Limited and of the Midland Bank Executor & Trustee Co. Ltd.

Mr. F. Whittock, Managing Director of the Free Trade Wharf Co. Ltd., has been appointed a Director of Coast Lines Limited. Mr. J. W. Ratledge and Mr. Percy Wharton, Assistant Managing Directors of Coast Lines Limited, have been appointed Directors of the Free Trade Wharf Co. Ltd.

Consequent on the death of Lt.-Colonel Clive Mansfield Turner, Mr. T. D. Slattery, of the Chief Commercial Manager's Office, London Midland & Scottish Railway, who for some years was attached to the L.M.S.R. New York organisation, and afterwards was with Associated British & Irish Railways Incorporated in that city, is returning to New York to act as General Traffic Manager for Associated British & Irish Railways Incorporated in the U.S.A. for the duration of the war.

Mr. Francis Goodricke, Assistant Advertising Manager, L.N.E.R., is retiring on January 31, on reaching the age limit.

INDIAN RAILWAY STAFF CHANGES

Mr. R. H. Paterson on return from leave has been appointed to officiate as Controller of Stores, N.W.R., in place of Mr. W. M. McGregor, proceeding on deputation to the Oudh & Tirhut Railway.

Khan Bahadur A. L. Sheik has been appointed to officiate as Deputy Chief Engineer (M.), N.W.R.

Mr. E. M. Egan, on return from leave, has been appointed Deputy Chief Commercial Manager, N.W.R.

Khan Bahadur Z. H. Khan has been appointed to officiate as Deputy Chief Operating Superintendent (M.), N.W.R.

Major R. W. Godley, Deputy Locomotive & Carriage Superintendent, B.B.C.I.R., on reversion from the War Department, has rejoined that railway.

At the annual meeting of the American Society of Mechanical Engineers, held in New York from November 29 to December 3, the honour was bestowed on Mr. Ralph Budd, President of the Chicago, Burlington & Quincy Railroad, of electing him to honorary membership in recognition of his forty years of railway service, his pioneering in building lightweight rolling stock, and his work as a civil engineer and designer of railway structures. Others similarly honoured were Mr. Roy V. Wright, Managing Editor of our contemporary, the *Railway Age*, for his services to railway engineering as author, editor, and publisher, and to the engineering profession generally; and Mr. Lewis K. Sillcox, Senior Vice-President of the New York Air Brake Company, also well-known as a transport engineer of distinction by such books as "Mastering Momentum."

Mr. George Ellson, C.B.E., M.Inst.C.E., M.Inst.T., who, as announced in our issue of December 3 last, retires on February 1 from the position of Chief Engineer, Southern Railway, and who has been appointed Civil Engineering Consultant to the company for two years to February 1, 1946, was born at Ripley, Derbyshire, in 1875. He was educated at Ripley College, and afterwards was apprenticed to the Butterley Co. Ltd., Derby; he served in the shops and drawing office of that firm, and studied concurrently at Nottingham University College. In 1896 Mr. Ellson was appointed draughtsman to E. C. & J. Keay Limited, and was placed in charge of several important contracts. Two years later he entered the service of the former South Eastern & Chatham Railway in the Engineering Department, under Mr. P. C. Tempest, and in 1906 he was appointed Resident Engineer. Between that year and 1913, Mr. Ellson was associated with several important undertakings, including the demolition of the old, and the building of a new, roof at Charing Cross Station, and the strengthening of Charing Cross and Cannon Street railway bridges. He then became Chief Assistant to the Chief Engineer; and in 1920 he was appointed Resident Engineer in charge of maintenance work throughout the whole of the South Eastern & Chatham system. On the amalgamation of the railways in 1923 he became Deputy Chief Engineer of the S.R. and was appointed Chief Engineer in 1927. Mr. Ellson was made an Officer of the Order of the British Empire for services rendered during the war of 1914 to 1918; he was made a Commander of the Order, for services to Civil Defence, in the New Year Honours List, 1942. He was awarded the Telford Medal & Premium of the Institution of Civil Engineers in 1921 for a paper dealing with the strengthening of Cannon Street railway bridge; and he received Telford Premiums in 1927 for a paper on the remodelling of Charing Cross and Cannon Street Stations, in 1938 for one on the Dover train ferry dock, and in 1943 for one on "Modern Trend of Railway Engineering Practice." He has also presented two reports to the International Railway Congress; in 1929 on investigations into the static and dynamic stresses in railway bridges, and in 1937 on the use of welding in the permanent way. Mr. Ellson is a Fellow and Past President of the Permanent Way Institution, and holds the rank of Lt.-Colonel in the Engineer & Railway Staff Corps, R.E. (T.A.). (*See editorial article, page* 79).

Elliott [*& Fry*

Mr. George Ellson

Chief Engineer, Southern Railway, 1927-44, who has been appointed Civil Engineering Consultant for two years

We regret to record the death, at the age of 67, of Mr. H. Salmon, a Director, and Works Manager, of the Expanded Metal Co. Ltd.

The late Mr. Edward S. Harkness, who was prominently associated with American railways, and whose death was recorded in our February 9, 1940, issue, left $97,070,933.

INSTITUTE OF TRANSPORT

Among those elected recently to associate membership of the Institute of Transport, in addition to those whose names were given in our last week's issue, are Messrs. I. Parkes, Assistant District Controller (Preston), L.M.S.R.; R. Postgate, Staff Assistant (Country Buses & Coaches), L.P.T.B.; W. A. Powell, Labour & Welfare Officer, Nigerian Railway; J. Robertson, L.M.S.R. (prisoner-of-war); and Captain W. M. Tomkins, Marine Superintendent (Glasgow), Union-Castle Mail Steamship Co. Ltd.

Mr. F. E. Ruddick, Chief Clerk, District Goods Manager's Office, Birmingham, Great Western Railway, who has been appointed Assistant District Goods Manager, Birmingham, entered the company's service at Smithfield Goods Station in 1903 and was transferred to the Chief Goods Manager's Office, Paddington, in the same year. He gained experience in various sections of the Rates Office until June, 1932, when he was transferred to the Birmingham District Goods Manager's Office as Chief Rates Clerk. In 1936 he was moved to Bristol District Goods Manager's Office as Outdoor Representative, and he was transferred to Avonmouth Docks as Goods Agent in the next year. In April, 1940, he was appointed to the position he now vacates. Mr. Ruddick saw service in France during the war of 1914-18.

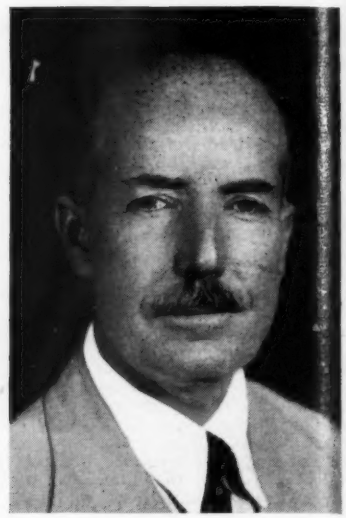
Mr. E. L. Manico, V.D., Deputy Chief Operating Superintendent, North Western Railway, India, as recorded in our last

Mr. E. L. Manico

Deputy Chief Operating Superintendent, N.W.R. (India), 1933-44

Mr. R. O. Banister

Appointed District Goods & Passenger Manager, Northampton, L.M.S.R.



Mr. P. W. Wilton Davies

Deputy Chief Engineer (Northern), N.W.R. (India), 1937-43

week's issue, has retired, and has been succeeded by Mr. A. G. Englefield. Mr. Manico was born in 1886, and commenced his railway career at the Bow Road shops of the old North London Railway. In 1909 he went to the Wolverton carriage shops of the L.N.W.R. Mr. Manico joined the North Western Railway of India in 1911, as Assistant Carriage & Wagon Superintendent, and was later Carriage & Wagon Superintendent at Sukkur, and Divisional Rolling Stock Officer at Delhi, Rawalpindi, and Karachi. Mr. Manico became Deputy Chief Operating Superintendent in 1933. On three occasions he has officiated as Chief Operating Superintendent.

Mr. R. O. Banister, Temporary General Assistant (Freight), Office of the Divisional Superintendent of Operation, Crewe, L.M.S.R., who, as recorded in our January 7 issue, has been appointed District Goods & Passenger Manager, Northampton, entered the service of the London & North Western Railway Company in 1906 as a clerk in the Stationmaster's Office at Preston. Apart from a period spent in the District Superintendent's Office at Lime Street, Liverpool, he remained there until 1914 when he joined the Forces. He served in France from 1915 to 1919, and in the latter year returned as Traffic Clerk for the Preston Area. In 1923 he became Assistant Yardmaster at Warrington, and in 1926 was appointed Yardmaster at Crewe. From 1929 to 1932 he was Head Office Inspector for the L.M.S.R. Western Division, and was stationed at Crewe. During this period he was in charge of the Traffic & Shunting Analysis Committee, and for a time filled the position of Assistant District Controller for the Crewe District. He was appointed Stationmaster at Blackpool (Central) in 1932, and went to Preston as Stationmaster in 1935. In the next year he was appointed Divisional Controller (Passenger Services) for the Central Division, and was stationed at Manchester. In 1938 he went to the London headquarters of the L.M.S.R. as Assistant, Passenger Services Section of the Chief Operating Manager's Department. In 1941 he became General Assistant to the Divisional Superintendent of Operation, Western Division, and was stationed at Crewe. He vacates this position on his present appointment.

Mr. P. W. Wilton Davies, V.D., who, as recorded in our last week's issue, has retired from the position of Deputy Chief Engineer (Northern), North Western Railway of India, was born in January, 1890. Mr. Wilton Davies was trained at Thomason College, Roorkee, and joined the North Western Railway in December, 1912. He was engaged on the Beas and Sutlej bridges on the Delhi-Lahore main line in 1913-15, and later on the construction of the Khanai-Hindubagh 2 ft. 6 in. line which was instrumental in opening up the chrome mines at Hindubagh in 1915. In 1917 he went on surveys to Zam and on towards Gumal Pass and to Murtaza. In the same year he was transferred to the Nushki Extension Railway, Dalbandin to Zahidan. At the end of 1918 Mr. Wilton Davies went to South Persia on the construction of a 2 ft. 6 in. line from Bushire to Shiraz. In 1924 he was engaged on the survey and construction of North Western Railway realignment from Pakpattan to Mailsi in the Sutlej Valley colony. In 1927 he was appointed Deputy Director, Civil Engineering (Construction), with the Indian Railway Board. He returned to the North Western Railway in 1929 as Deputy Engineer, Quetta & Karachi. Mr. Wilton Davies held the position of Deputy Chief Engineer (Northern) from 1937 until his retirement last November, except for a short period in 1938 when he was Senior Government Inspector, Railway Circle 4, Lahore.

The late Sir Henry Edward, who was Ministry of War Transport representative for the Middle East, left £245,657.

Lahore running shed, the largest on the North Western Railway (India)

An article on locomotive working on that system was published in our issues of July 9 and July 30 last

TRANSPORT SERVICES AND THE WAR—226

Spare-Time Work on Aircraft

Some 400 London Transport clerks, engineers, porters, and typists are working 3,440 hours a week on making and assembling delicate mechanism for aircraft.

No Towels for Sleeping Cars

As the L.M.S.R. stocks of towels for its sleeping cars are now exhausted, the company has announced with regret that from Monday last, January 24, no towels can be provided for occupants of either first or third class sleeping berths.

Fire Extinguishers on Buses

The Motor Vehicles (Equipment & Use Regulations, 1941, require that a suitable) and efficient apparatus for extinguishing fire shall be carried in or upon every public service vehicle, and that such apparatus shall comply with the requirements of the Fire Offices Committee. The specification issued by the Fire Offices Committee (the latest form of which is dated May 29, 1934) has now been amended to provide that two soda-acid or foam type extinguishers, each of one gallon capacity, constructed in accordance with British Standard Specification No. 138 or No. 740, will be accepted as an alternative to the requirements under the present specification of one 2-gal. extinguisher.

Government Road Haulage Scheme

The rates for vehicles hired under the Government Road Haulage Scheme have been under review by the Ministry of War Transport and the Finance Panel of the Standing Joint Committee of Road Hauliers' National Organisations in the light of the general experience gained in the operation of the scheme, and particularly of the effect on working conditions of the recent exceptionally heavy demands on haulage.

When the rates were originally agreed, little was known of the effect on the life of tyres of the modifications in their structure made necessary by the shortage of crude rubber. Further, in order to meet local shortages of transport it has been necessary to take vehicles away from their normal routes and in some cases to change their bases, with the result that the average cost of maintenance, apart from rises in the cost of materials and the dilution of labour, has been increased.

Agreed modifications are as follow :—

1.—The mileage payments have been increased substantially.

2.—The weekly payments have been increased, and will be based in future on a 46-week year; that is, a full year's standing charges will be paid for 46 weeks of availability. If the vehicle is available for more than 46 weeks, the additional weeks will be paid for *pro rata*. On the other hand, no payment will be made during any period of unavailability from whatever cause arising. This arrangement will give operators an incentive to maintain their vehicles in roadworthy condition.

3.—Instead of paying for tyres as an element in the weekly and mileage payments, the Ministry has agreed to reimburse the actual cost of new (including retreaded) tyres. The operator will be allowed to retain any credit payable in respect of covers returned in good condition.

4.—Where a hired vehicle is purchased new after January 1, 1944, at a price which is more than £50 in excess of the price allowed for when the original rates were fixed, an allowance will be made for the additional depreciation involved and for interest on the additional outstanding capital expenditure.

5.—The allowance in respect of employers' liability and workmen's compensation will be raised from 30s. to 40s. per cent. of the wages paid to drivers and statutory attendants.

The revised payments will operate retrospectively from January 1, 1944.

Unique Train-Aircraft Signalling

Railway history was made recently when signalling arrangements devised for the safety of both trains and aircraft were brought into use at a point on the system of the L.M.S.R. Northern Counties Committee. We believe this is unique in railway practice. It arose out of a wartime need to base larger aircraft at an aerodrome in Northern Ireland, and in consequence of this a longer runway was necessary. The only way an extension could be made was across the railway. The problem was considered from all angles, including the question of deviating the railway, or ramping the runway over the track, but the only solution, in view of the urgency of the work, was a level crossing with adequate signalling.

At the crossing, a hut had been built, this is in communication with the Watch Office of the aerodrome. Modified double-line block instruments and telephones are installed between these points. When the runway is required, the aerodrome staff asks permission from the signalman in the same way as he would be asked to accept a train.

The following fixed signals are operated by the crossing keeper from the ground frame beside the crossing :—

Signal	Distance from ground frame
Down distant	1,420 yd.
Down outer home	540 yd.
Down inner home	100 yd.
Up distant	1,970 yd.
Up outer home	1,090 yd.
Up home	520 yd.

The signals are normally "on," and are lowered only for the passing of trains. They are interlocked with the block instruments and cannot be taken off when permission has been given for aircraft to use the runway.

Submersible Span Bridge in Iraq

In order to provide for the passage of river traffic on the Shatt-al-Arab near Basra, the Royal Engineers devised a novel movable span bridge, which, instead of lifting or swinging, submerges to a depth of 20 ft. The span is 92 ft. in length, has a deck width of 15 ft., and weighs 35 tons. Normally, the weight of the span is taken by two transverse bearing girders, one at each end, and road and rail traffic passes freely over it. When, however, river traffic has to be let through the bridge, the weight of the span is taken off the bearing girders by four hoists, one at each corner, cables from which run over pulleys on overhead steel towers of gantry-like design, and thence to the four corners of the span. With the span thus suspended, the bearing girders can be slid back by hand clear of the end of the span, which can then be lowered by the hoists to a depth of 20 ft. below water level. The parts of the piers between the hoist towers are recessed to allow of the lowering of the span, and it is these recesses that are spanned by the bearing girders, when in position to carry the span. After the vessel or vessels have passed through this 90 ft. by 20 ft. channel, the hoists again lift the span above the level of the bearing girders, which are then slid out across the recesses, and the span is lowered on to them for the resumption of road and rail traffic. The hoists are worked by hand and the piers are of timber pile construction. The whole bridge is, in fact, simple in design and operation, but essentially practical.

Slovak Railway Road Services

Road motor services operated by the Slovak State Railways for the conveyance of passengers and luggage now number 47 routes with a total length of 1,836 km. (1,140 miles). Goods services aggregate 98 routes, totalling 311 km. (193 miles).

German Railway Fatalities in 1943

According to a Stockholm report, 1,870 persons were killed during the past year in accidents on German railways. The same report says that Dr. Albert Ganzenmüller, Secretary of State in the German Ministry of Transport, has stated that many of the accidents were caused by fatigue among the staff.

Conveyance of Croat Goods by Road

Conveyance of goods on the State-operated road motor services in Croatia was begun some time ago, with the object of easing the congestion on the railways caused by dislocation of railway services resulting from the guerrilla fighting. Combined rail and road conveyance is also available in certain instances. For these consignments ordinary railway bills of lading are used, but a special form of bill of lading, called *prievoznica*, has been adopted for conveyance by road motor only.

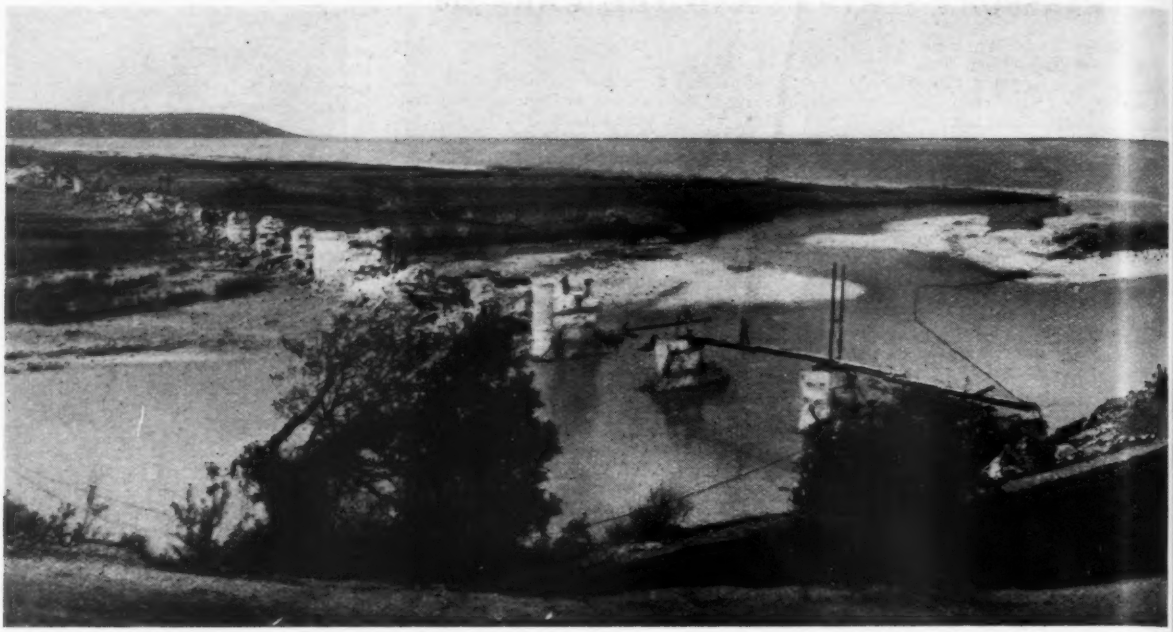
Railway Developments in Slovakia

Railway work in hand in Slovakia at present includes the conversion to standard gauge of the 14-mile narrow-gauge line between Dubrava and Banska Stiavnica. It was begun on October 10 and is to be completed by the end of 1946. The cost of conversion is estimated at Kronen 190,000,000. The line was opened in 1873; it was built only for the conveyance of ore to Dubrava (on the Bratislava-Zvolen main line), but passenger services were introduced in recent years.

Among five new lines being built last summer, when some 15,200 workpeople were employed, the most important is an east-west railway in eastern Slovakia, crossing the mountain region between Presov and Straszke. The new line will be about 50 km. (31 miles) long and will pass through Vranov, the terminus of a branch from the south. The new work is intended to obviate the necessity for crossing territory now in Hungarian occupation, over which three Slovak trains a day in each direction operate in transit without stopping on the Hungarian section of the line.

Inland Shipping in Croatia

Inland shipping in Croatia is reported to be of growing importance to the economic life of the country, particularly at present, when the railways have difficulty in meeting the requirements of substantially increased traffic. Inland waterways in Croatia are stated to total some 1,300 km. (808 miles), of which the River Danube accounts for 270 km. (168 miles). According to a recent report from Croatia, much of the foreign trade makes use of the waterways, chiefly of the Rivers Danube, Sava, and Drava, for the export of such bulk goods as bauxite and timber, and of large-scale consignments of the country's staple products, such as plums, tobacco, hemp, and flax. The import of mineral oil products from Roumania is effected almost exclusively *via* the Danube route. Zemun, about 3½ miles to the north-west of Belgrade, is the most important inland port. Next in importance



The railway bridge over the River Sangro which was destroyed by the retreating German Forces; the view was taken from the south bank of the river. South African engineers soon effected repairs to the bridge and railway for the use of the advancing 8th Army. The picture is interesting as giving a good visual indication of the extent of railway destruction by the German Forces in Italy

comes Sisak on the River Sava, 31 miles by rail from Zagreb, but some 62 miles by water. The Sava is not navigable for ships above Sisak.

Women Drivers in Germany

On January 7 the Berlin radio broadcast an appeal to German women to volunteer as bus and lorry drivers, in order to release further men for the fighting services.

Army-Built Assam Railways

Indian Army engineers of the Transportation (Railway) Construction Troops, fighting malaria, the monsoon, and the jungle growth of Assam, have completed on scheduled time at least two important railway-building projects, according to a report from Calcutta. The first involved laying 18 miles of track through heavy jungle; the other consisted of building approach lines on a bank 7 ft. high across water-logged country.

South African Record Traffics

Preliminary reports from Cape Town indicate that in 1943 the South African Railways carried 10,000,000 more long-distance passengers than in 1939. Every serviceable vehicle was worked to capacity. Locomotives scheduled for scrapping have been rebuilt or repaired. Military traffic made heavy demands on passenger accommodation, and more than 5,000 special trains were run for military purposes. The railways also broke all records for goods traffic, transporting 42,600,000 tons in 1943, compared with 35,500,000 tons before the war. The average amount of coal shipped from Union ports before the war was 2,000,000 tons annually. The Railways & Harbours Administration is now making provision for 6,000,000 tons.

U.S.A. Finance for Mexican Highways

An extensive highway construction programme is being carried out in Mexico; the major item is the work on the uncompleted link of the Inter-American highway between Mexico and the Guatemalan border. It is now revealed that the project is being financed by the Export-Import Bank of Washington, a Federal Government organisation, which late in 1941 provided a credit of $30,000,000 for this purpose in view of the importance of this road link between North, Central, and South America.

Croatian Traffic Suspension

All passenger traffic on the Croatian State Railways is suspended for one month from January 23, according to a German news agency message quoting a despatch from Zagreb.

Railway Station News Broadcasts

At the Union Terminal at Portland, Maine, U.S.A., used jointly by the Boston & Maine and Maine Central Railroads, arrangements are now in force whereby at stated times passengers hear brief summaries of world news as they go out over the air. By arrangement with a local radio station, a special telephone line has been laid from the station to the railway terminal, where this circuit is cut into the regular loud-speaker system which announces the trains to passengers. The news broadcasts are made four times daily, and each one lasts 5 min.

American Railway War Records

In two years from the American entry into the war, it is calculated by Major-General C. P. Gross, Chief of the United States Army Transportation Corps, the railways of his country have hauled about 3½ times as many troops in special trains and coaches, and 5 times as much Army freight and express, as they did in the 19 months of American participation in the 1914-1919 war. It is reckoned that nine-tenths of all army freight tonnage in the U.S.A. today is being moved by the railways, and that troop movements—apart entirely from the individual movement of men on leave—are responsible for 20 per cent. of the total present passenger-miles of the United States railways.

One of the biggest railway achievements claimed by the U.S. Army Transportation Corps overseas is that of increasing the capacity of the Persian Gulf railway "corridor" to some 130,000 tons a month, in getting supplies to Russia; and it is also claimed that this corps increased the carrying capacity of the French North African lines by 70 per cent.

Taxes on U.S.A. Fares

The Committee on Ways & Means of the United States House of Representatives has approved an increase from 10 to 15 per cent. in the tax on amounts paid for passenger transport, in connection with the schedule of new excise taxes which is being prepared for inclusion in the proposed tax bill. The Treasury had recommended an increase to 25 per cent.

U.S.A. Woman Labour Possibilities

An investigation has been set on foot by the United States Office of Defense Transportation to determine more precisely than at present the types of railway work in which women can be employed satisfactorily. It is in the West that the man-power problem is the most serious, despite the extent to which female labour is already being used, and, for the purpose of study, a division of the Chicago, Rock Island & Pacific Railway has therefore been selected. Here a detailed examination will be made of the opportunities for employing women in offices, shops, engine-sheds, yards, stations, store depots, and elsewhere. The Baltimore & Ohio Railroad has loaned Miss Olive Dennis, who has been in the company's engineering department for over 20 years, after graduation in civil engineering at Cornell University, to assist in the investigation.

American High-School Railway Labour

At a recent congress of the American Railway Bridge & Building Association, appreciative reference was made by Mr. W. G. Powrie, Engineer, Maintenance of Way, Chicago, Milwaukee, St. Paul & Pacific Railroad, to the maintenance work that has been effected on his system by high-school boys. Most States allow the employment of boys of 16 and 17, with varying restrictions as to hours, and, in

most cases, requiring the boys to obtain permits from the proper State or municipal authorities. Some States have lately lowered their minimum age limit from 18 to 16, and it is hoped that others may fall into line. The first move, in early spring, was for division officers to call on high-school authorities in cities, towns, and villages along their divisions to recruit part-time assistance in bridge gangs and section crews during term time, and full-time work in the vacations. Frank discussions took place as to pay, working conditions, transport, and welfare & safety supervision, and an excellent response was obtained. Where a number of the boys could be worked into a single crew, a high-school coach or a master was enlisted to act as a "monitor," and these monitors have been most helpful in handling the boys, preventing ragging, and warning against unsafe practices; further, they have provided both a safety-valve for grievances and a channel for suggestions, with benefit both to the boys and to the railway. Safety has been a paramount consideration; so far as possible, boys have been assigned to jobs for which they are best fitted physically, and for the heavier jobs the number of boys has been increased as compared with the number of men used for similar work. More assistant foremen also are needed, and they are required to have great patience and a keen understanding of boys. The boys on bridge and building jobs have been taken into the regular camps of the bridge and building forces, but special camps composed entirely of boys were established for some of the track gangs, and were equipped with electric light, hot and cold water, and shower baths. Efforts were made to serve the types of food the boys liked. Lack of experience has naturally made the boys slower in their work than the normal track gangs, but they have proved willing and adaptable, and have excelled in handling power track tools. When the autumn terms opened, most of the boys who had worked during the summer were lost as full-time workers, but many continued at week-ends, and such week-end assistance during the winter is regarded as invaluable by the railway. Further, it is believed that, in the event of emergency, the schools concerned will be prepared to release the boys for short periods of full-time work.

A Central Control Board for Transport

Mr. Gilbert Szlumper's plan for post-war organisation

Mr. Gilbert Szlumper, Director-General of Supply Services, Ministry of Supply, was the principal speaker at a luncheon held by the Engineering Industries Association at the Waldorf Hotel, London, on January 25. Mr. E. C. Gordon England, Chairman of the Association, presided.

Mr. Szlumper said that in considering the probable trend of post-war transport three broad courses seem to present themselves: first, that each form should revert to its pre-war status, both internally and also in its relationship to other forms of transport; secondly, that transport should be treated as one comprehensive service, each form—either by the force of economics or by arrangement—being allotted its proper and suitable part in the general scheme of transport; the whole to be administered by private enterprise; and thirdly, that the Government should assume ownership and control of all transport—in other words—nationalise it.

His view was that the first was impossible, the second desirable in some form, and the third disastrous. In pre-war days inland transport had arrived at a state of competition that had become a menace to the prosperity of the main contestants—rail and road, a state which might be intensified after this war by the fabulous number of Army vehicles that might become available, and the flood of sentiment that might make road-haulage licenses easily available to the ex-service man: coupled to this competition would also be air competition of dimensions which it was not yet possible to visualise.

He had spent his time in the war in four Government Departments—the War Office, the Ministry of Transport, the Board of Trade, and now the Ministry of Supply, and the more experience he had of them the more convinced he was that the business of a Government was to govern and not to try to run industries in which it had had neither training nor experience.

Nationalisation would inevitably mean that transport problems would be subordinated to the political aspect. It would blanket the commercial outlook for fear of questions in the House, or of the Select Committee on National Expenditure—for "commercial outlook" often meant that risks had to be taken where the guide had to be experience rather than theory, and who had ever met a Civil Servant willing to take a chance—properly so as he was dealing with public funds?

Nationalisation would mean that a horde of black-coated striped-trousered young men, full of theory, would be playing at trains, or lorries, when their knowledge of transport was limited to the cost of a season ticket from their home town to Whitehall, and their experience of it to wondering why the 8.15 to town was late on a foggy morning.

In practice nationalisation of transport had been financially and commercially disastrous in practically every country to which it had been applied, save, I think, only two—South Africa and Japan, in both of which countries the low cost of native labour had enabled the nationalised system to be worked at a profit: generally it has caused bloated staffs, unreasonably high wages, uneconomic operating ratios, high conveyance charges, and bad services and amenities, and had had nothing to commend it to the business community or to the population in general.

Rail, road (both passenger and goods), canal, and internal air services, should all be brought under a central control, and their revenues and expenditures brought into a common account—for the appropriate and efficient use of each form of transport was attainable only if it was a matter of financial unconcern who actually carried the traffic, and this could be achieved only by making all forms of transport directly interested in the whole of the financial results of carrying the whole of the public traffic of the country. This would probably mean the extinction of the "B" licence holder, or at any rate the resolution of him into his two constituent parts; and to prevent the scheme being vitiated, a geographical limit of operation would have to be imposed on the "C" licensee.

He would not include in the scheme ports or coastwise shipping, but he suggested both these agencies should set up central bodies which would form co-ordinating links with the inland transport central body. He also suggested the provision of special enclosed roads for high-speed traffic, or other traffic unsuited to the general highways of the country. These would be constructed and financed by means of revenue raised by tolls.

As to the structure of this inland transport amalgamation—the National Transport Board—his view was that it should consist of a Central Executive body which would control regional executive bodies and allow them maximum autonomy within guiding lines of policy; the regional bodies would probably work through a number of district or area bodies, but the fixation of the boundaries of the regions would be a difficult question, for they would have to be large enough to form economic units and small enough to be really manageable.

Alongside the central and regional bodies he suggested transport advisory bodies which would exercise no executive functions, but would determine policy. The central executive body should comprise the "heavyweight" representatives of each of the forms of inland transport—road, rail, canal, and air—plus the chairman of each regional body to ensure that regional needs and peculiarities are brought into full consideration by the central body. The duty of this central executive would be to handle all matters of major policy, to look after the finances of the whole undertaking, to lay down standards for attainment, to be responsible for research, occupational training of employees, possibly the centralised purchase of stores, and all other matters common to the whole undertaking.

The regional bodies, whose duty it would be to conduct all the transport of the region, would include representatives of each of the forms of transport.

The transport advisory side could well consist of representatives of the users of transport nominated by appropriate organisations (such as the Federation of British Industries, the Associated British Chambers of Commerce, the Engineering Industries Association, the Season Ticket-holders Association, etc.), also representatives of the employees nominated by responsible Trades Unions, representatives of the shareholders, the Chairman of each Regional Transport Advisory body, and possibly a representative of the Government.

The Chairman of this Transport Advisory body should be a Government nominee, chosen perhaps from a list of names to be submitted by the various interests: he must be a man of the widest business interests, and preferably one whose name was a household word.

As to finance, his view was that it was better at the outset to erect the framework of the complete structure rather than to advance gingerly brick by brick. To this end he would prefer to see the National Transport Board in the position of owner, issuing mainly fixed-interest-bearing stocks in exchange for the assets it acquired, and in exchange for the existing stocks and shares; it was of vital importance that some portion of the stocks should be remunerated by dividends that fluctuated with the prosperity of the undertaking, with possibly some maximum limit. Without some such spur, the undertaking was bound to be a lifeless body without enthusiasm or initiative.

Lord Leathers Congratulates Southern Railway Workers

Utility locomotives built to Government order

Lord Leathers, Minister of War Transport, at Charing Cross Railway Station on January 19, inspected one of the 64 special utility locomotives which have been turned out to Government order by Southern Railway works during 1943.

Later, at a luncheon given to representative workers including five women, who had helped to make the engines, Lord Leathers congratulated them and said:—"The railways will be tried this year as never before; they must and will prove equal to all that is demanded of them. You here have a vital part to play in the task of moving the armies of victory."

Like all weapons of war, locomotives and rolling stock were wearing out, Lord Leathers said. The railways today were carrying half as much again as they did before the war. But the means of keeping them supplied with the necessary locomotives, rolling stock, and equipment had been sadly depleted by the call-up of large numbers of railway workers. That was why he had to call on everyone to give maximum effort. The response had been handsome.

"When I called on the railways to help me in the special programme of 2-8-0 engines which we urgently needed," Lord Leathers continued, "the Southern Railway came forward and undertook to build 110. This was a formidable programme when we remember that before the war the annual output of new locomotives by the Southern Railway averaged only ten. By prodigious efforts, and with the co-operation of the other railways, however, the promise is being fulfilled. You have, in fact, passed by no less than four engines the target figure of 60 for 1943."

To do that a great effort of organisation was required on the part of all, he said. Today all the shops were working at full pressure. In a special word to women workers, he said the Ministry appreciated the way they came forward to take part in new and heavy work. Day in and day out the work had gone on. Their workshops were in the front line of the German raider. Not one day's production had been lost through labour difficulties, a splendid example of responsibility, and loyalty, and also of the friendly give-and-take which had always signalised relations between staff and management on the railways.

Mr. Robert Holland-Martin, Chairman of the Southern Railway Company, who presided, said: "Many of us would have liked to make shells and bombs that would hit the Germans directly, but without the means of transport none of those things can be brought into use. In making engines we are providing that transport."

The railway works were in a position to turn out far more than ever before, he said, and every man and woman was striving to bring victory within our grasp at the earliest moment.

One of the 22 workers, Mr. C. E. Biggs, chief erecting shop foreman, replied to the toast to the workers.

Two model engines were presented to Lord Leathers, who was accompanied from the Ministry of War Transport by Sir Cyril Hurcomb (Director-General), Sir Alan Mount (Chief Inspecting Officer of Railways), Sir Alan Anderson (Controller of Railways & Chairman, Railway Executive Committee), and Mr. J. Rosswick (Assistant Public Relations Officer).

Representing the Southern Railway were:—

Mr. Robert Holland-Martin, Chairman; Colonel Eric Gore-Browne, Deputy Chairman; Messrs. E. J. Missenden, General Manager; Mr. J. Elliott, Deputy General Manager; O. V. Bulleid, Chief Mechanical Engineer; A. Cobb, Locomotive Running Superintendent; C. J. Francis, Stores Superintendent; C. Grasemann, Public Relations & Advertising Officer; J. L. Harrington, General Assistant to General Manager; G. R. Walter, Assistant (Advertising); and the following Works Managers and representatives of the staff of the Chief Mechanical Engineer and Stores Superintendent: Messrs. F. Munns (Eastleigh Works Superintendent), K. H. Morris (Eastleigh Locomotive Works Manager), C. E. Biggs (Foreman), W. C. Etheridge (Shopman), Mrs. E. A. Nash (Shopwoman); Messrs. W. J. Feeley (Eastleigh Carriage Works Foreman), R. E. Davis (Shopman), Mrs. R. E. Tyler (Shopwoman). Messrs. O. G. Hackett (Brighton & Lancing Works Manager), G. Woodman (Lancing Works Foreman), E. Scarfield (Shopman), Mrs. R. Kumm (Shopwoman); Messrs. E. Worlsey (Brighton Works Foreman), W. O. Evans (Shopman), Mrs. E. Moore (Shopwoman); Messrs. M. S. Hatchell (Ashford Works Manager), R. Bolton (Foreman), C. Neary (Shopman), Mrs. J. C. Hills (Shopwoman). Messrs. Leonard Newman (Eastleigh Stores Issuer), J. Seifert (Brighton Temporary Supervisory Foreman), Kenneth Smith (Ashford Temporary Storesman).

(*See illustrations, page* 90)

Isle of Man Air Services

An important shareholding change has taken place in regard to Isle of Man Air Services Limited by the acquisition by the Isle of Man Steam Packet Co. Ltd. of additional shares, giving a 50 per cent. holding in the company. The L.M.S.R. and the Isle of Man Steam Packet Company jointly began operating air services to and from the Isle of Man in 1935. In 1937 there was a merger of interests with other operators under which Isle of Man Air Services Limited was reconstituted, and the share capital taken up in equal shares by the L.M.S.R., the Isle of Man Steam Packet Company, and Olley Air Services Limited.

Some little time ago the L.M.S., G.W., and Southern Railway Companies acquired the majority of the shares of British & Foreign Aviation Limited, of which Olley Air Service is a wholly-owned subsidiary. The railway companies immediately gave the Steam Packet Company the opportunity of acquiring an additional holding in Isle of Man Air Services, which offer was accepted. At an extraordinary meeting of the shareholders of Isle of Man Air Services, held in the Isle of Man on January 12, amendments to the Articles of Association of the company were approved to give effect to the arrangements agreed. These provide for the board of the air company in future to consist of six directors, three appointed by the L.M.S.R. and three by the Steam Packet Company.

Mr. W. P. Bradbury, O.B.E. (L.M.S.R.), the present Chairman, continues in that office; and Mr. J. F. Crellin, M.C., M.L.C., J.P., Deputy Chairman of the Isle of Man Steam Packet Company, has been appointed Deputy Chairman. The board is now as follows: Messrs. W. P. Bradbury, J. F. Crellin, J. R. Quayle, and A. Robertson; and Wing-Commander A. H. Measures and Captain G. P. Olley.

During the war, Isle of Man Air Services can operate only the restricted service permitted by the Air Ministry, but the company is planning a wide expansion of facilities immediately conditions are suitable and equipment available. Despite the limited number of aircraft which can be spared for civil air services, and the very restrictive conditions under which the services are operated, Isle of Man Air Services during the three years to June last has operated 748,000 miles, and conveyed 35,000 passengers, in addition to nearly one million lb. of mail and freight.

(*See also editorial note, page* 78)

Collision at Level Crossing near Nantwich

Verdicts of "death by misadventure," with a rider criticising the railway company's regulations, were returned in each case when the Coroner for West Cheshire, Mr. G. W. Wain, sitting at Nantwich on December 28, 1943, concluded his inquiry into the deaths of two members of the R.A.F., killed in a collision on December 3, 1943, between a goods train and a military motor vehicle at Hack Green level crossing near Nantwich, on the Nantwich-Market Drayton line of the G.W.R. Mr. P. W. Pine, solicitor, represented the G.W.R., and representatives of the military and the railway trade unions were also present.

The driver of the preceding military vehicle deposed to arriving at the closed crossing gates, sounding his horn, and being allowed across by the gatekeeper, who first operated the levers of the protecting crossing distant signals. (The lamp of the signal concerned was declared to have been burning.) The weather was very foggy. Passing over the crossing he heard a crash and found that the following vehicle had been run into.

The driver of that vehicle stated that he heard no train coming. The driver of the goods train deposed to finding the distant signal off, when he first saw it close to in the fog, and to whistling as he neared the crossing. The next thing he knew was that he had run through the gates. He pulled up within 90 yd. He distinctly saw the signal in the clear position. His guard confirmed this evidence. The crossing keeper had been nine days in charge at the spot, but the District Inspector deposed to being satisfied that he knew his duties properly. The gates ought not to have been opened until the train had passed because of the fog. The crossing keeper's wife endeavoured to stop the second vehicle from crossing when she realised that the train was at hand, but the engine caught the back of it. The crossing keeper admitted that his indicator in the block circuit showed "train on line"; he put his signals on and listened but could hear nothing coming. He thought the train must only just have left Nantwich and that he had time to cross the vehicles. He had not had to do with crossing gates until he took his two days' instruction before being left in charge and had not previously had to work the gates in a fog.

The Coroner expressed some criticism of the drafting of the regulations, which appeared to him to allow an undesirable degree of discretion to the gateman.

Questions in Parliament

Vandalism on Railway Trains

Mr. W. Thorne (Plaistow—Lab.) on January 18 asked the Parliamentary Secretary to the Ministry of War Transport, if he could state the number of bulbs in railway carriages stolen or broken every month on the four main-line railways and on the L.N.E.R., and on the suburban lines.

Mr. P. J. Noel-Baker (Joint Parliamentary Secretary to the Ministry of War Transport) in a written answer stated: I am grateful to Mr. Thorne for this opportunity of calling attention to the widespread vandalism on railway trains, which has increased to serious proportions. On the London & North Eastern Railway alone, an average of 2,400 electric-light bulbs in railway carriages are broken or stolen every month. The figure for the four main-line companies is 14,500 every month. Unfortunately, it is not practicable to give separate figures for suburban services. I am unfortunately compelled to add that this wanton destruction is not limited to electric-light bulbs. During 1943, over 25,000 carriage windows were smashed; 45,000 blinds were removed, stolen or destroyed; some 20,000 window straps were stolen or destroyed; over 13,500 seats were damaged by slashing, and many of the removable cushions were stolen; 13,000 luggage racks were rendered useless, mainly by cutting; and more than 3,500 mirrors were stolen or smashed. In addition, many other fittings have been wantonly wrenched off, or stolen. Even first-aid and A.R.P. equipment has been stolen. I need not say that this might lead to the most serious results, if a railway accident were unhappily to occur.

Sleeping Car Reservation

Mr. Donald Scott (Wansbeck—C.) on January 19 asked the Parliamentary Secretary to the Ministry of War Transport, by what authority ticket inspectors employed by the L.N.E.R. were asking to see passengers' identity cards.

Mr. Noel-Baker stated in a written answer: The Minister of War Transport has made it a condition for the reservation of a sleeping berth under the Government Priority Scheme that the passenger for whom the reservation is made shall produce his identity card if he is requested by a railway official to do so. Mr. Scott will appreciate that the purpose of this measure is to ensure, in the interests of all concerned, that berths are occupied by the priority passengers to whom they have been allotted.

Train Services from Leyton

The Rev. R. W. Sorensen (Leyton West—Lab.) on January 19 asked the Parliamentary Secretary to the Ministry of War Transport, if he had considered complaints made by the public and endorsed by Leyton Borough councillors regarding the inadequacy of train services from Leyton, particularly between 6 and 8 a.m., and whether any action would be taken to improve the position.

Mr. Noel-Baker in a written answer stated: The representations recently made by members of the public and by the Leyton Borough Council are now under consideration, and I will communicate with Mr. Sorensen as soon as possible.

Railway Booking Offices and £5 Notes

Mr. J. Stanley Holmes (Harwich—Lib. Nat.) on January 19 asked the Parliamentary Secretary to the Ministry of War Transport, in what circumstances were the railway companies prepared to accept £5 notes in payment for tickets; under what authority a booking clerk was entitled to refuse such a note unless the passenger signed his name and address on the back and produced his National Registration Identity Card; and whether he had anything to add to his answer on this matter given to him on June 9 last.

Mr. Noel-Baker stated in a written answer: Instructions have been issued to railway staffs to the effect that, unless there is reason to doubt their genuineness, or unless the change required is not available, bank notes tendered in payment of fares or carriage charges may be accepted if their value approximates to the amount of the fares or carriage charges, thus reducing change to a minimum. As Mr. Holmes will be aware, the Bank of England £5 note is legal tender in payment only of an amount of £5 or over and change cannot be demanded as a matter of right, if it be tendered for payment of a smaller sum. The instructions provide that under ordinary conditions notes should not be accepted if the amount of change required is appreciably in excess of £1.

Co-ordination of Transport

Mr. Ellis Smith (Stoke—Lab.) on January 19 asked the Parliamentary Secretary to the Ministry of War Transport, if he had considered the report of the conference held in Manchester, on July 5, 1938, which considered modern problems of transport, providing evidence of overlapping, duplication and inefficiency; and would he consider the need for a 50-mile radius transport board on the omnibuses of public ownership and the electrification of the railways in the area with new lines running out to North Wales, Lake District, Cheshire, Blackpool, Morecambe, North Staffordshire, and Derbyshire.

Mr. Noel-Baker stated in a written answer: I have not been able to find any record that the report of the conference held in Manchester in 1938, to which Mr. Smith refers, was ever received in my department. In answer to the second part of Mr. Smith's question, I would remind him that I said in answer to a question on November 10, that the Minister of War Transport is always ready to consider any sound scheme for promoting co-ordination and increased efficiency in transport services, which local authorities and transport undertakings may lay before him.

Rail Transport of Potatoes

Lieutenant H. W. Butcher (Holland-with Boston—Lib. Nat.) on January 19 asked the Parliamentary Secretary to the Ministry of War Transport, what steps he was taking to ensure an adequate supply of railway trucks and sheets for the transport of potatoes from South Lincolnshire.

Mr. Noel-Baker in a written reply stated: Every effort is being made to provide an adequate supply of railway wagons and sheets for the transport of potatoes from South Lincolnshire, and extensive use is being made of road transport and coastal shipping. But the pressure on the available supplies of wagons and sheets for the transport of essential traffics is very heavy, and wagons must be so used as to give the best general result. I am grateful to Lieutenant Butcher for this opportunity of saying again that traders can render an important service to the nation by loading and unloading wagons with the least possible delay.

Great Western Railway Ambulance Work

Ambulance work has continued to be steadily maintained on the Great Western Railway during the past year, and, in spite of difficulties entailed by war conditions, some Divisions show an increase in examination results over the 1941-42 figures. The number of candidates who passed examinations under the St. John Ambulance Association was 6,096, and of these students 381 were recruits to the movement.

The Athlone Bowl, awarded to the Division gaining the highest percentage of new members in proportion to the total number of adult staff employed, this year has been won by the South Wales Docks Division, with a percentage of 0·99. This Division was previously successful in winning the bowl in 1940 and 1941. The runners-up (for the second year in succession) are the Plymouth Division with a percentage of 0·87.

Many reports of exceptionally efficient first aid rendered by members of the staff were received and the following awards have been granted:—

Gold Medal: Harry Westbury, Signalman, Wooburn Green.

Silver Medal: Benjamin A. Pitcher, Leading Driver, Neath.

Bronze Medal: Alfred B. Ford, Stationmaster, Menheniot.

Certificates: Robert S. Goodman, Goods Guard, Southall; Mornington J. Rich, Station Master, Drinnick Mill; Rowland Davies, Shunter, Port Talbot Docks; Philip G. Elliott, Signal Lineman, Wellington (Salop); Charles F. Paltridge, Shunter, Worcester; George O. Williams, C. & W. Examiner, Croes Newydd; Thomas Pardington, Travelling Ticket Collector, Paddington; Walter S. Salter, Porter, Taunton; David Watkins, A.R.P. Station Leader, Paddington; George J. Dennis, Craneman, Swansea Docks; Thomas J. O. Beynon, Guard, Wellington (Salop).

The following gold efficiency awards were granted during the year:—

15 year gold medals	240
20 year gold bars	203
25 year gold medals	72
30 year gold bars	39
35 year gold bars	10
40 year gold bars	4

The progress of first aid work depends very largely on the voluntary services of the Divisional Secretaries, Class Secretaries, Instructors, and others; during the year, the following members of the staff received recognition from the Order of St. John of Jerusalem for outstanding services over a period of years:—

Officer (Brother)

Mr. G. H. Iles, Chief Clerk, Docks Manager's Office, Cardiff (Divisional Secretary, South Wales Docks Division).

Serving Brothers

Mr. J. A. Martin, Clerk, Staff & Establishment Office, Aldermaston.

Mr. E. M. Lewis, Brake Examiner, Chief Mechanical Engineer's Department, Swindon.

Mr. W. F. Burdett, Signalman, Traffic Department, Saltney.

Mr. J. Green, Oil-Gas Maker, Chief Mechanical Engineer's Department, Exeter.

Mr. F. Hatton, Goods Guard, Traffic Department, Shrewsbury.

Mr. W. J. Price, Signalman, Traffic Department, Bala.

Mr. A. E. Williams, Stationmaster, Traffic Department, Gresford.

Mr. W. Hookins, Passenger Guard, Traffic Department, Penarth Town.

Vellum Vote of Thanks

Mr. F. E. Saunders, Acting Dock Foreman, Docks Department, Swansea.

Notes and News

Nigerian Timber for Railway Sleepers.—Nigeria, British West Africa, is to relay 160 miles of railway track in the Colony. The rails will be American and the sleepers of Nigerian timber. It is hoped to begin this work, which will cost £860,000, early this year.

National Railways of Mexico Increase.—As from December 15, 1943, all rates of the National Railways of Mexico applicable to wagon loads were increased 10 per cent., with the exception of those on rice, beans, flour, corn, and wheat, in outgoing and incoming coasting trade traffic.

The Turkish State Railways.—According to recently-published Turkish statistics, Turkey has built 3,360 km. (2,088 miles) of railways in the past 20 years, in addition to 43,136 km. (26,800 miles) of roads. Taking into account the purchase of Turkish railways formerly owned and operated by foreign companies, and also railway construction now in hand in southern Anatolia, the total railway expenditure incurred in the past 20 years amounts to approximately £T.1,200,000,000. Some 43,250,000 passengers were conveyed in 1942 by the Turkish State Railways, compared with only 5,200,000 in 1935. Passenger receipts totalled £T.87,200,000 and £T.15,130,000 respectively.

Glyn, Mills & Co.—The capital of this old established private banking house incorporating Child & Company and Holt & Company, was acquired in the summer of 1939 by the Royal Bank of Scotland. In the 119th statement of assets and liabilities as at December 31, 1943, total assets are shown at £61,315,697, as against £66,646,976 at the end of 1942. In the present assets are included: £5,536,864 (£6,417,215) in coin, bank notes, and balance at Bank of England; £2,687,202 (£2,395,328) balances with, and cheques in course of collection on, other banks in the United Kingdom; £8,325,700 (£11,266,200) money at call and short notice; £1,122,066 (£2,062,888) bills discounted; £6,500,000 (£8,000,000) Treasury deposit receipts; and £20,544,358 (£20,568,670) investments, including £20,114,071 (£20,004,221) in British Government securities. These items together represent £44,716,190, or 86·68 per cent. of the current, deposit, and other accounts of £53,893,820, which include provision for contingencies. The issued capital remains at £1,060,000 and the reserve fund at £850,000.

Bengal & North Western and Rohilkund & Kumaon.—The liquidators of the Bengal & North Western and the Rohilkund & Kumaon Railway Companies, whose undertakings were taken over by the Government of India on January 1, 1943, have issued to the stockholders statements with regard to contentions by the Government of India which may not only protract the liquidation, but also may cause the amount of the distributions to the ordinary stockholders to be much less than was expected. From advance payments of £8,400,000 to the Bengal & North Western and of £1,400,000 to the Rohilkund & Kumaon on March 1, 1943, stockholders of both companies received 310 per cent., preference holders were paid off in full, and debenture stocks were cleared. The Secretary of State now claims to deduct from the balance of the purchase price £697,500 in respect of loss of goods and dislocation of traffic during the civil disturbances of August and September, 1942, and on account of the condition of the rolling stock. The directors contend strongly that such a claim is not justified, and have put in a counterclaim. Other claims have been put in by the Secretary of State, and are being contested.

L.M.S.R. Ready for Snow.—L.M.S.R. snow ploughs working in the moorlands in Yorkshire and Westmorland have been equipped with portable plug-ended telephones so that delays to urgent freights may be reduced to a minimum in the event of blockages to the lines by heavy snowfalls. The new installation will enable the snowplough staffs to keep in constant touch with Traffic Control.

Highland Transport Co. Ltd.—The report to September 30, 1943, of this company in which the L.M.S.R. holds a 50 per cent. interest, shows a gross trading profit of £35,302 (£31,850). After providing for depreciation, directors' fees, E.P.T., and income tax, and adding £972 brought forward, there is a credit balance of £3,082 (£2,566). The dividend is maintained at 1s. 3d. a share, £500 is again placed to general reserve, and £500 is applied to writing down good will, leaving £989 to be carried forward.

London Transport Point-Heaters.—A new type of point-heater has been installed on the London Transport railways to prevent ice forming on points during cold weather. The new heater, which has been evolved by London Transport engineers, consists of a tank of hot oil sunk into the ground near the points. Pipes convey the oil through each chair and the heat is thus conducted to the steel rails and point-operating gear. Thermostats switch on the heat automatically according to the atmospheric temperature. So far, 40 sets of these point-heaters have been fixed in especially exposed parts of the railways, including depots where frozen points might easily delay trains going into service.

Spanish Air Traffic in 1943.—According to official statistics recently issued in Spain, air traffic in that country showed a decrease in the first quarter of 1943 compared with the same period of 1942. The figures are given in the table below. Comparative figures for 1941-42 were given in our issue of September 17 last, page 284.

	January-March, 1942	January-March, 1943
Civilian aircraft—		
Incoming	1,736	1,393
Outgoing	1,734	1,382
Passengers—		
Incoming	13,240	9,353
Outgoing	14,640	10,264
Transit	3,991	4,174
Mail and newspapers—		
Incoming (lb.)	135,086	102,868
Outgoing (lb.)	175,685	167,242
Transit (lb.)	116,021	118,558
Luggage and goods—		
Incoming (lb.)	505,314	374,213
Outgoing (lb.)	651,884	483,391
Transit (lb.)	306,515	254,076

Tecalemit Limited.—At the ninth ordinary general meeting, Mr. Sylvester G. Gates, the Chairman, said that the operations for the year to July 31, 1943, had shown a notable expansion which was reflected in the rise of stock in hand and work in progress from £403,801 to £647,534, and had resulted in a trading profit of £91,055, as against £63,403 for the previous year. This profit figure had been arrived at after setting aside £610,000 as provision for taxation. The directors were neglecting nothing they could rightfully do to assure to Tecalemit Limited its proper place after the war; meanwhile, they took the view that it was in the best interests of the shareholders to maintain a conservative policy. For this reason the rate now recommended for a final dividend remained unchanged at 12 per cent., less tax, making 18 per cent. for the year. He was sure they would wish to join him in paying a tribute to the exertions of those who had surmounted many formidable difficulties and rendered possible the satisfactory results achieved.

U.S.A. Highway Programme.—President Roosevelt has submitted to Congress a proposal for the post-war development of a National Highway System in the U.S.A. totalling 34,000 miles of new roads.

British and Irish Railway Stocks and Shares

Stocks	Highest 1943	Lowest 1943	Prices Jan. 25, 1944	Prices Rise/Fall
G.W.R.				
Cons. Ord.	65¼	57¼	61½	+ ¼
5% Con. Pref. ...	120½	108	119	+ 1
5% Red. Pref. (1950)	110½	106	109	+ 2
5% Rt. Charge ...	137½	123½	130½	+ 1
5% Cons. Guar. ...	135½	121⅞	128½	—
4% Deb.	118	107½	113½	—
4½% Deb.	119	109⅞	115½	—
4½% Deb.	124½	116	122½	+ 1
5% Deb.	138	127	131½	+ 1
2½% Deb.	77	72½	73½	—
L.M.S.R.				
Ord.	34⅛	28	33½	+ ½
4% Pref. (1923) ...	66½	58	63	—
4% Pref.	80½	73	78	—
5% Red. Pref. (1955)	105¾	102	103½	+ 1
4% Guar.	107	98½	103	+ ½
4% Deb.	109¾	103¼	106½	+ ½
5% Red. Deb. (1952)	111½	108	109½	—
L.N.E.R.				
5% Pref. Ord. ...	12⅞	7⅜	10	+ ½
Def. Ord.	5⅜	3⅜	4¼	— ¼
4% First Pref. ...	66½	57½	62	—
4% Second Pref. ...	36½	30⅜	34½	+ ½
5% Red. Pref. (1955)	99⅜	93	98½	—
4% First Guar. ...	102⅜	94	101	+ 1
4% Second Guar. ...	93½	85⅜	92½	+ ½
3% Deb.	86⅜	78⅜	81½	—
4% Deb.	109⅞	101⅜	105½	+ ½
5% Red. Deb. (1947)	106½	102	104	—
4½% Sinking Fund Red. Deb. ...	108	103¼	104½	—
SOUTHERN				
Pref. Ord.	80	72½	77	—
Def. Ord.	26¾	20⅜	25½	+ ½
5% Pref.	119½	106¾	118½	+ 1½
5% Red. Pref. (1964)	114	108½	114½	—
5% Guar. Pref. ...	136	122	128½	+ 1
5% Red. Guar. Pref. (1957)	117	109¾	113¾	+ 1
4% Deb.	117½	106	113	+ ½
5% Deb.	137	126	128½	—
4% Red. Deb. (1962-67)	112	106½	108½	+ 1
4% Red. Deb. (1970-80)	112	107	108½	—
FORTH BRIDGE				
4% Deb.	109	104½	105	—
4% Guar.	105	102½	102½	—
L.P.T.B.				
4½% "A"	125½	114	119½	—
5% "A"	133⅞	123	128½	—
3% Guar. (1967-72)	100½	97	99	—
5% "B"	124	114	119½	—
"C"	72	53	66	—
MERSEY				
Ord.	34½	27	34	—
3% Perp. Pref. ...	68	59½	66	—
4% Perp. Deb. ...	104	102½	103§	—
3% Perp. Deb. ...	83	78½	79§	—
IRELAND				
BELFAST & C.D.				
Ord.	9	6	7½	—
G. NORTHERN				
Ord.	24½	16	26½	+ 1½
Pref.	—	—	45	—
Guar.	—	—	62½	— ½
Deb.	—	—	84	+ 2½
G. SOUTHERN				
Ord.	30	9½	45	— 3
Pref.	30	11	46	— 2
Guar.	64	26½	70½	— ½
Deb.	88⅛	51⅛	87½	— ½

§ ex-dividend

OFFICIAL NOTICES

No. 536419 "Improved Cushioning Side Bearing for Railway Vehicles."

THE owners of the above Patent are desirous of arranging by licence or otherwise on reasonable terms for the manufacture and commercial development of the invention. For particulars address in the first instance to Herbert Haddan & Co., 31 and 32, Bedford Street, Strand, London, W.C.2.

RAILWAY Accountant offers Passenger Agents part-time services for compiling Monthly Classifications and agreeing internal records. When replying please indicate volume of traffic and fee offered.—Box 201, *Railway Gazette*, 33, Tothill Street, London, S.W.1.

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

The estimated cost if $75,000,000 (say £19,000,000). The plan takes into consideration both commercial development and national defence.

South African Railways Earnings.—For the period December 12, 1943, to January 8, 1944, earnings of the South African Railways amounted to £3,393,796, an increase of £204,644 compared with the corresponding period in 1942-43.

L.N.E.R. Canteen at Neasden.—On January 20, Mr. George Mills, Divisional General Manager, Southern Area, L.N.E.R., opened at Neasden a staff canteen. It seats 160 persons, and the catering arrangements are under the direction of John Gardner (London) Limited, which firm already operates 50 canteens for the L.N.E.R.

The Corumba to Santa Cruz Railway.—It is now reported that, in October last, the Government of Bolivia authorised work to be begun on the section of the Corumba to Santa Cruz Railway between Santa Cruz and San José de Chiquitos. From Corumba (across the Brazilian frontier) to Santa Ana has been completed, and thence to San José is well in hand, as recorded in our issue of December 24 last, page 639. It is hoped to complete the whole railway by the end of the present year. The main difficulty now is the supply of rails.

Great Southern of Spain Railway Co. Ltd.—The report of the year 1942 states that the company is still without any definite news as to the final decision of the Spanish Government regarding the amount of the compensation due in respect of the reversion to the State of the Company's concessions according to the Law of January 24, 1941, under which all the broad-gauge railways were taken over. The compensation was to take the form of an annuity, but under the Law of February 27, 1943, an alternative was provided in the shape of a voluntary exchange of the shares and debentures for bonds of the 3½ per cent. Amortizable Debt, and this settlement was adopted in the case of the principal companies. In the case of other companies, of which the Great Southern is one, it is left to the Government to decide what is just. No complete accounts are available for the year, 1942. Taking into account only the revenue and expenditure in London, including first mortgage debenture interest and sinking fund, the loss for the year is £22,477, making the accumulated debit balance forward, £214,525.

Large L.N.E.R. Tobacco Consignment.—The largest single consignment of raw-leaf tobacco to go to a famous Nottingham firm arrived recently at London Docks, and was carried to Nottingham by the L.N.E.R. The shipment was so large that 700 wagons were used for its transport. Faced with the possibility of being inundated with tobacco-laden wagons, local officials of the L.N.E.R. at Nottingham dealt with the early train loads on Sunday, December 5, by using 18 motor lorries continuously from 9 a.m. to 4.15 p.m. to convey the tobacco in "tierces" (a tierce is a barrel-like container of wood) from their Queen's Walk and London Road depots to a bonded store. By 4.15 p.m. 621 tierces, weighing nearly half a ton each, had been put into bond. At no time were the Excise authorities waiting for a load, and by late afternoon 99 wagons had been released for other work. The full tonnage eventually cleared from 700 wagons was 2,200, with a total approximate value of £7,968,000. It is estimated that the 4,427 tierces contained enough raw-leaf tobacco for the manufacture of nearly two thousand million cigarettes.

Minor Railways and Post-War Transport.—The Minister of War Transport has invited the Association of Minor Railway Companies to submit a memorandum on its views in connection with post-war reorganisation of transport. The Association looks after the interests of seventeen member companies which are still working independently. It was formed in 1938, with the approval of the Minister of Transport, to represent light and other railways not parties to the Railway Companies' Association.

Ilford Collision, L.N.E.R.—The Coroner for East Ham, Dr. P. E. Skeels, on January 20 opened his inquiry into the deaths of 6 of the 9 persons killed in the collision which occurred on the evening of January 16 at Ilford Station, L.N.E.R., when a train from Norwich overtook one from Yarmouth, standing at the platform. The three other persons killed were members of the U.S.A. armed forces, and the Coroner explained that he had no jurisdiction as to them; no inquiry could be held without direction from the Secretary of State.

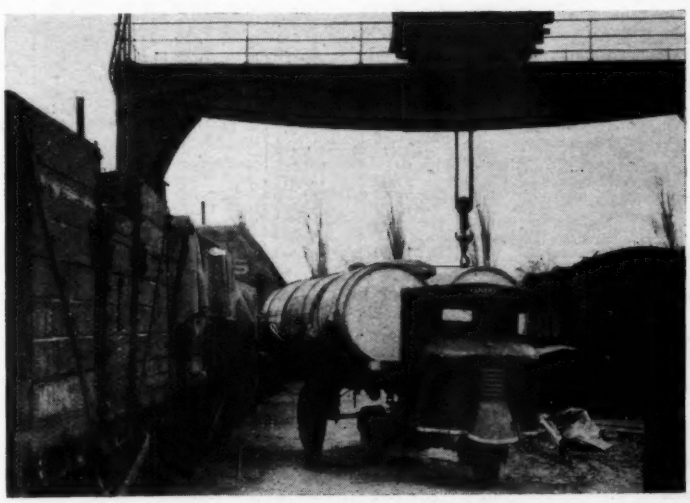
The L.N.E.R. Chief Legal Adviser, Mr. Miles Beevor, expressed the company's regret at the accident and gave an assurance that all proper claims arising from it would be met as sympathetically and speedily as possible. He also expressed the company's appreciation of the help given so willingly by numerous persons after the accident. After the ordinary formalities, the Coroner adjourned the inquest until February 3. On the next day, January 21, Sir Alan Mount, C.B., C.B.E., Chief Inspecting Officer of Railways, accompanied by Major G. R. S. Wilson, opened at Liverpool Street Station, on behalf of the Minister of War Transport, the usual technical inquiry into the case. After explaining its nature and scope and being made acquainted with certain facts, Sir Alan decided to hold the rest of the proceedings in private, stating that his report on the occurrence would be issued in due course.

Tea Bars at L.N.E.R. Stations.—To extend light refreshment facilities on station platforms and lessen congestion in refreshment rooms, the L.N.E.R. is providing tea bars at some of its main-line stations. They have been installed already at Peterborough and Doncaster and will be provided soon at Grantham. The tea bars have been equipped for rapid service of cups of tea, sandwiches, meat pies, cakes and pastries, and cigarettes. The tea bars are of standard unit design, to ensure rapid erection on the site and minimum interference with traffic working.

Contracts and Tenders

Below is a list of orders placed recently by the Egyptian State Railways:—

Equipment & Engineering Co. Ltd.: Resistance units.
Siemens Bros. & Co. Ltd.: Automatic desk-telephones.
General Electric Co. Ltd.: Meters.
W. T. Glover & Co. Ltd.: Cable.
Consolidated Pneumatic Tool Co. Ltd.: Hammers, pneumatic materials.
Hoffmann Manufacturing Co. Ltd.: Ball bearings.
R. Hood Haggie & Son Ltd.: Ropes, wire.



A mechanical horse loaded with six "tierces" of tobacco, part of the recent large consignment of 2,200 tons carried by the L.N.E.R. between the London Docks and Nottingham (see accompanying paragraph)

Railway Stock Market

The volume of business on the Stock Exchange has again been only moderate in most sections, and was unresponsive to the latest war developments. Nevertheless, the general undertone was not unsatisfactory, and confidence was indicated by the very little selling in evidence. In the absence of active markets, junior stocks of the home railways tended to attract profit-taking on any small improvement in prices, and current levels show moderate declines as compared with a week ago. Nevertheless, sooner or later it would seem that yield considerations will attract increased demand. This may not develop until markets generally become active, although the forthcoming dividend announcements may very well tend to draw attention to the generous yields still ruling. The view that, in recognition of the twenty-first year of the formation of the four grouped lines, the dividends will be as liberal as possible within the limits of the wartime rental have maintained hopes of the possibility of fractionally better payments on L.M.S.R. ordinary and L.N.E.R. second preference. Both of these companies, unlike the Great Western and Southern, made allocations to contingencies reserves last year.

Home railway prior charges fully maintained recent gains, and on balance further small rises have been recorded among guaranteed and senior preference stocks. Great Western and Southern 5 per cent. preferences are now not far short of the highest levels recorded in 1943. Similar remarks apply to L.N.E.R. first and second guaranteed, which have also attracted increased attention in recent weeks on yield and investment merits. The better demand for senior railway stocks has arisen partly from the trend in gilt-edged and other front-rank stocks, but has also been a reflection of the more confident views which have gained ground as to the post-war position of the railways and the attitude of the authorities thereto. The impression is that the statements of the railway chairmen at the annual meetings, which are perhaps being awaited on this occasion with even more than usual interest, will tend to confirm hopes as to the future. The wartime fixed rental has not in any way affected the peacetime right of the railways to "standard revenue" as defined in the Railways Act of 1921. Meanwhile, however, the fixed rental agreement is scheduled to run until at least one year after the war; and moreover the belief continues in many quarters that it may remain in force until there is final agreement on post-war transport organisation. In that event it might well be the rental agreement would then react to the advantage of stockholders as to dividends, bearing in mind that with the eventual decline in wartime activity, the earnings of the railways must be expected to show substantial contraction.

Great Western ordinary has moved back to 61 at the time of writing, which compares with 61¾ a week ago. On the other hand, the 5 per cent. preference rose further to 119, and the 4 per cent. debentures were maintained at 114, and the guaranteed stock at 129. Whereas L.M.S.R. ordinary reacted from 33¾ to 33⅜, the 1923 preference at 62⅝ was maintained on balance, as was the senior preference at 78½. Among L.N.E.R. stocks, the second preference tended to attract chief attention, but at 34 was half-a-point lower than a week ago. On the other hand, the first preference was maintained at 61¾; the guaranteed stocks moved back slightly when sent out "xd." Southern deferred was fractionally lower on balance at 25½; the preferred, after improving to 77¼, eased to 77, but was unchanged on balance. Southern guaranteed held its recent improvement to 129, as did the 4 per cent. debentures at 113; the 5 per cent. preference was better at 118. London Transport "C" remained at 66¼.

Uncertainty as to political developments in some of the South American republics had a dominating influence on South American railway securities. Nevertheless, selling was very moderate, particularly in Brazilian stocks, such as San Paulo ordinary and Leopoldina debentures. Argentine railway stocks continued to show a downward trend. Elsewhere, United of Havana debentures have reacted from 28½ to 24 following publication of the annual report. Canadian Pacifics were steady, and gains were shown in the preference stock and debentures.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ending	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1941/2	No. of Weeks	Aggregate traffics to date: Totals 1942/3	Aggregate traffics to date: Totals 1941/2	Aggregate traffics to date: Increase or decrease	Shares or stock	Prices: Highest 1943	Prices: Lowest 1943	Prices: Jan. 25, 1944	Yield %
				£	£		£	£	£					
South & Central America	Antofagasta (Chile) & Bolivia	834	16.1.44	32,160	+ 5,290	3	87,680	76,190	+ 11,490	Ord. Stk.	15¾	10	12	Nil
	Argentine North Eastern ...	753	15.1.44	14,088	+ 3,642	29	406,722	372,072	+ 34,650	,,	7⅜	5	6½	Nil
	Bolivar	174	Dec., 1943	4,776	— 1,467	52	62,732	59,762	+ 2,970	6 p.c. Deb.	22½	18	21½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	23½	19	18	Nil
	Buenos Ayres & Pacific ...	2,807	15.1.44	119,400	+ 7,920	29	2,785,800	2,673,420	+ 112,380	Ord. Stk.	8½	5½	6	Nil
	Buenos Ayres Great Southern	5,080	15.1.44	241,140	+ 42,180	29	4,735,080	4,278,240	+ 456,840	Ord. Stk.	17½	9½	12½	Nil
	Buenos Ayres Western ...	1,930	15.1.44	64,800	+ 12,180	29	1,501,140	1,505,460	— 4,320	,,	16	9⅞	10⅝	Nil
	Central Argentine	3,700	15.1.44	151,140	+ 12,366	29	4,102,764	3,704,991	+ 397,773	,,	10¾	6½	8	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4⅞	3	4	Nil
	Cent. Uruguay of M. Video	972	15.1.44	36,304	— 257	29	943,793	685,518	+ 258,275	Ord. Stk.	7⅜	4½	5	Nil
	Costa Rica	262	Nov., 1943	19,893	+ 6,310	21	114,386	64,960	+ 49,426	Stk.	16	12½	15	Nil
	Dorada	70	Dec., 1943	29,000	+ 8,000	52	272,607	194,705	+ 77,902	1 Mt. Db.	96	92	93½	6⅓
	Entre Rios	808	15.1.44	18,690	+ 1,650	29	566,232	527,808	+ 38,424	Ord. Stk.	9	5½	6½	Nil
	Great Western of Brazil ...	1,030	15.1.44	23,600	+ 4,500	3	47,100	38,300	+ 8,800	Ord. Sh.	59/9	24/4½	27/6	Nil
	International of. Cl. Amer.	794	Nov., 1943	$565,434	+ $83,910	47	$6,589,280	$5,554,318	+ $1,034,962	—	—	—	—	—
	Interoceanic of Mexico ...	—	—	—	—	—	—	—	—	1st Pref.	2½	1⅛	1½	Nil
	La Guaira & Caracas... ...	22¾	Dec., 1943	6,985	— 2,575	52	97,885	90,370	+ 7,515	5 p.c. Deb.	90	80	87½	Nil
	Leopoldina	1,918	15.1.44	46,294	+ 19,693	3	87,442	55,600	+ 31,842	Ord. Stk.	7¾	4	5½	Nil
	Mexican	483	14.1.44	ps. 333,800	+ ps. 12,500	3	ps. 688,100	ps. 577,100	+ ps. 111,000	Ord. Stk.	1⅜	⅜	1	Nil
	Midland Uruguay	319	Oct., 1943	17,778	+ 2,984	50	65,802	50,786	+ 14,916	—	—	—	—	—
	Nitrate	382	15.1.44	5,438	— 1,291	3	5,436	6,729	— 1,291	Ord. Sh.	83/9	71/3	68/9	Nil
	Paraguay Central	274	14.1.44	$47,921	+ $9,681	29	$1,511,252	$1,099,110	+ $412,142	Pr. Li. Stk.	75	51½	69	8½
	Peruvian Corporation ...	1,059	Dec., 1943	115,532	+ 32,487	27	637,187	497,667	+ 139,520	Pref.	17⅜	10¾	11½	Nil
	Salvador	100	Oct., 1943	c 67,000	+ c 14,000	17	c 335,000	c 236,000	+ c99,000	—	—	—	—	—
	San Paulo	153½	9.1.44	53,929	+ 17,370	2	57,140	45,285	+ 11,855	Ord. Stk.	71	57	55½	3⅛
	Taltal	160	Dec., 1943	7,725	+ 2,042	26	35,225	31,086	+ 4,139	Ord. Sh.	37/6	20/-	20/-	Nil
	United of Havana	1,301	15.1.44	55,605	+ 3,576	29	1,323,105	1,286,734	+ 36,371	Ord. Stk.,	8⅝	3½	3	Nil
	Uruguay Northern	73	Oct., 1943	1,438	— 14	17	5,548	4,757	+ 791	—	—	—	—	—
Canada	Canadian Pacific	17,034	14.1.44	1,034,000	+ 88,600	2	1,994,600	1,731,200	+ 263,400	Ord. Stk.	18	13⅞	16½	Nil
India†	Barsi Light	202	Dec., 1943	19,058	— 1,057	39	191,400	151,518	+ 40,882	—	—	—	—	—
	Bengal-Nagpur	3,267	Oct., 1943	1,001,025	+ 138,600	30	7,209,525	6,162,825	+ 1,046,700	Ord. Stk.	104½	101½	103½	3⅛
	Madras & Southern Mahratta	2,939	10.10.43	247,050	— 107	28	5,325,600	4,541,813	+ 783,787	,,	110	106	108½	6⅛
	South Indian	2,349	30.11.43	197,318	+ 28,836	34	4,892,362	4,218,218	+ 674,144	,,	105½	101½	108½	4
Various	Egyptian Delta	—	10.12.43	19,974	+ 3,102	33	396,334	309,214	+ 87,170	Prf. Sh.	6⅛	2⅞	4½	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	45	32	42½	8⅜
	Midland of W. Australia ...	277	Nov., 1943	30,114	— 10,384	21	165,805	159,912	+ 5,893	Inc. Deb.	101	93	100	6
	Nigerian	1,900	30.12.43	68,456	+ 7,866	26	1,933,466	1,833,420	+ 160,046	—	—	—	—	—
	South Africa	13,291	30.10.43	825,805	+ 44,197	31	25,562,333	23,650,797	+ 1,991,653	—	—	—	—	—
	Victoria	4,774	Sept., 1943	1,321,580	— 51,483	—	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current prices and are within a fraction of ⅛ Argentine traffics are given in sterling calculated @ 16⅔ pesos to the £
† Receipts are calculated @ 1s. 6d. to the rupee § ex dividend